How To Play Go

Lesson 1: Introduction To Go

1.1 About The Game Of Go

Go is an ancient game originated from China, with a definite history of over 3000 years, although there are historians who say that the game was invented more than 4000 years ago. The Chinese call the game Weiqi. Other names for Go include Baduk (Korean), Igo (Japanese) and Goe (Taiwanese). This game is getting increasingly popular around the world, especially in Asian, European and American countries, with many worldwide competitions being held.

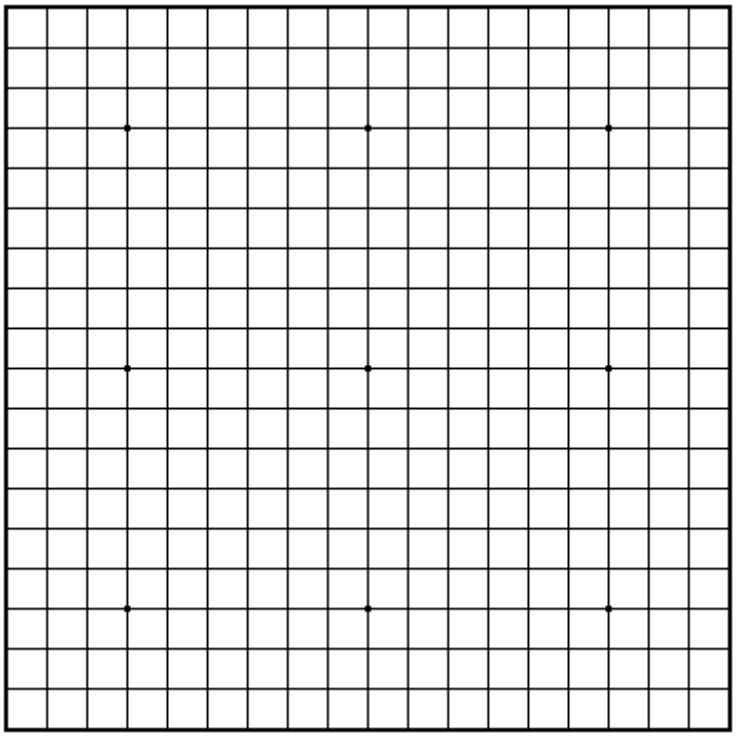

Diagram 1-1

The game of Go is played on a board as shown in Diagram 1-1. The Go set comprises of the board, together with 180 black and white stones each. Diagram 1-1 shows the standard 19x19 board (i.e. the board has 19 lines by 19 lines), but there are 13x13 and 9x9 boards in play. However, the 9x9 and 13x13 boards are usually for beginners; more advanced players would prefer the traditional 19x19 board.

Compared to International Chess and Chinese Chess, Go has far fewer rules. Yet this allowed for all sorts of moves to be played, so Go can be a more

intellectually challenging game than the other two types of Chess. Nonetheless, Go is not a difficult game to learn, so have a fun time playing the game with your friends.

Several rule sets exist and are commonly used throughout the world. Two of the most common ones are Chinese rules and Japanese rules. Another is Ing's rules. All the rules are basically the same, the only significant difference is in the way counting of territories is done when the game ends. Sections 2 to 4 are common to all the rules.

1.2 Getting Started

A Go game is started with the board empty. Stones are placed on the intersections of the board. The player holding black stones plays first, and each player place a stone on the board on his turn. Players are free to place their stones at any unoccupied intersections on the board.

However, once the stones are placed on the board, they are not to be moved to another location. Also the stones are not to be removed from the board at will, subject to the rules explained in the following Sections. Besides, players are not allowed to stack a stone on top of another stone on the board. These are the rules that make Go unique compared to most other board games, including International Chess and Chinese Chess. The beauty of Go also lies in the simplicity of its rules.

1.3 Liberties

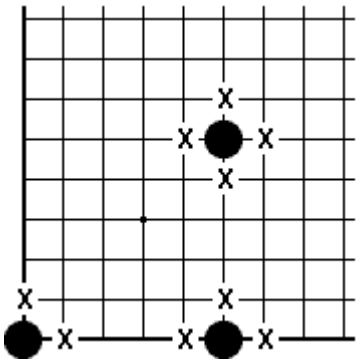

Diagram 1-2

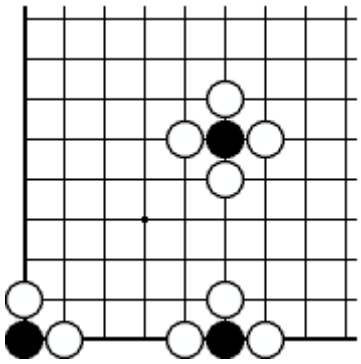

Diagram 1-3

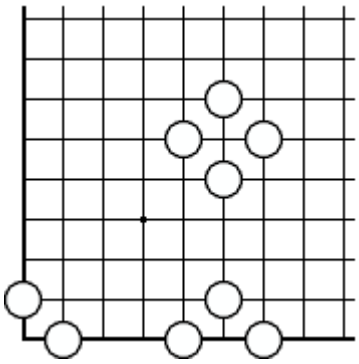

Diagram 1-4

Liberties refer to the unoccupied intersections (or points) that are horizontally or vertically adjacent to the stone. Note: *points diagonally next to a stone are not liberties of that stone*. Liberties of the three black stones are marked as X in Diagram 1-2. A stone in the middle has four liberties; a stone at the side has three liberties; and a stone at the corner has two liberties.

The rule says that *stones without liberties must be removed from the board*. For example, in Diagram 1-3, the three black stones have no liberties and therefore they must be removed from the board as shown in Diagram 1-4. However, the reverse is also true: *stones with at least one liberty must remain on the board*.

Making a move that causes your stones (but not your opponent's) to have no liberties is known as suicide. Usually *suicide is forbidden*, but some variations of the rule allow for suicide, whereby the suicide move causes the stones without liberties to be removed from the board and it is the opponent's turn to play.

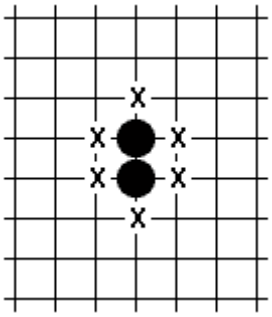

Diagram 1-5

A chain consists of two or more stones that are connected to each other horizontally or vertically, but not diagonally. The liberties of a chain are counted together as a unit. An example is Diagram 1-5, where the two black stones have a combined total of six liberties marked X. When white has played at all the positions marked X, such that the two black stones have no liberties at all, then white will remove the two stones together. *At no time is white allowed to remove any of the two stones individually.* As the saying goes, "One for all, all for one".

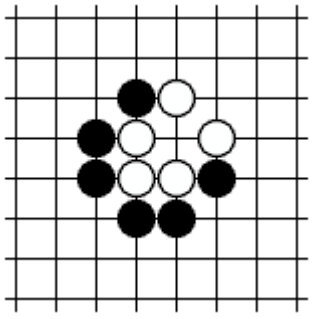

Diagram 1-6

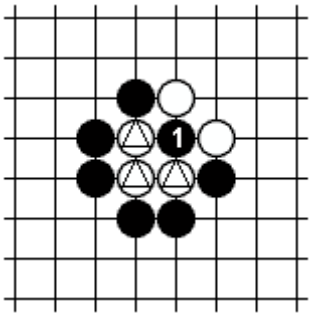

Diagram 1-7

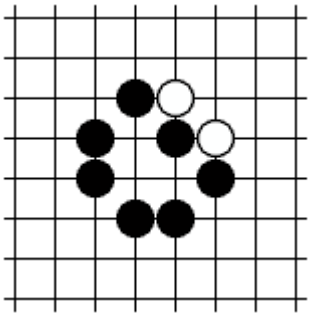

Diagram 1-8

Let's take a look at Diagram 1-6. What if black decides to play at 1 as shown in Diagram 1-7? Notice that the black stone marked 1 has no liberties, but the three white stones (marked with triangle) have no liberties either. This

rule determines the result: *the player that causes stones of both players to have no liberties will have his opponent's stones removed*. Hence, black will remove the three white stones, with the end result shown in Diagram 1-8.

1.4 Ko

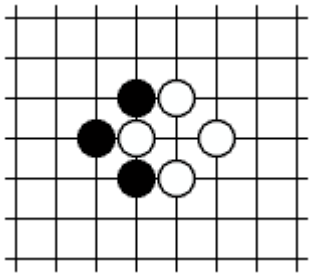

Diagram 1-9

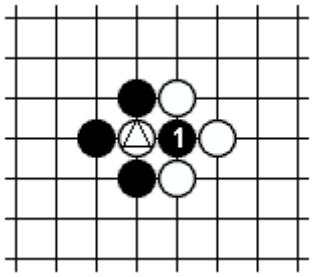

Diagram 1-10

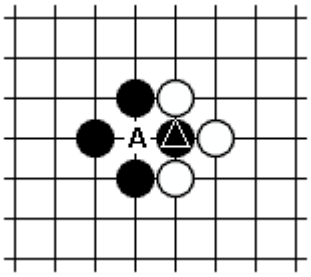

Diagram 1-11

We start off with Diagram 1-9, and black 1 takes away the white triangle stone in Diagram 1-10, resulting in Diagram 1-11. Now we can see that white may want to play at point A in Diagram 1-11, and the pattern goes back to Diagram 1-9. Then black decides to play at 1 at Diagram 1-10 and so on, and the game will never end. Such a pattern is known as ko.

So when black 1 takes the ko in Diagram 1-10, the rule for ko says that white has to *wait one turn* before he can take back the ko. This simply means that white cannot play at A in Diagram 1-11 on his turn immediately after black takes the ko (white can play elsewhere), but he can play at A on his next turn. If white managed to take back the ko, the same rule applies to black: black has to wait one turn before he can take back the ko.

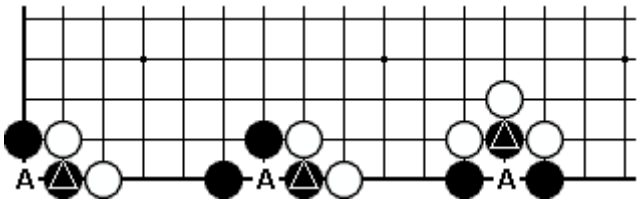

Diagram 1-12

Diagram 1-12 shows other valid examples of ko, involving the point A and the black triangle stone.

1.5 Ending A Game

A game is ended when both players agree that a game has ended – both players will pass on their consecutive turns. If one player passes but his opponent choose not to pass and make a move on the board, then the game

will not end. When a game has ended, the winner is found by comparing territories (see next section – Section 6 on Territories).

Alternatively, if one player surrenders, his opponent automatically wins the game. In Go, a player may not place more than one stone on the board on his turn, so it is usual to place two stones on the board to indicate that he surrenders. This is especially useful in overcoming language barriers between players with different cultural backgrounds.

1.6 Territories

The objective of Go is to obtain more territory than your opponent. It does not really matter what is the difference – so long your territory is more than your opponent's, you win the game.

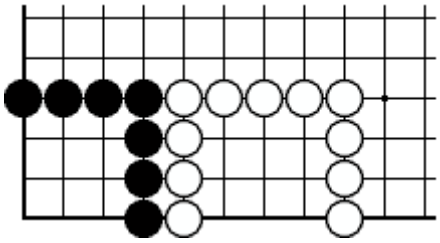

Diagram 1-13

When we count territory, we count the number of points surrounded by the stones. In Diagram 1-13, black owns a territory of 9 points; white too claims 9 points as his territory.

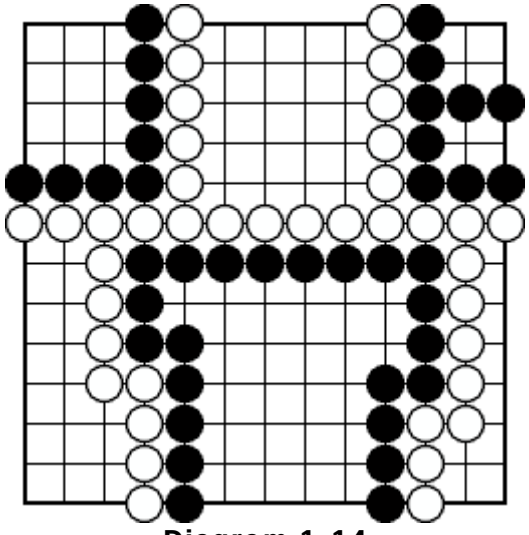

Diagram 1-14

When calculating who wins the game, due to the fact that stones can be captured or removed from the board, we take into account the number of

stones as well. Therefore we find the sum of territories and number of stones for a player, and see if it is more than the opponent's sum.

Consider Diagram 1-14, a game played on the 13x13 board. Black and white has 39 stones each. Black has surrounded 45 empty points while white has 46. Adding them together, black has 84 points and white has 85 points. Hence white wins this game.

[More Stuff] – Komi

As the black player plays the first move on the board, black has an advantage over white. So in competitions or even friendly games, black has to compensate his advantage by *automatically reducing his territory by a fixed amount known as the komi*. In 19x19 board games, the komi is usually 6½ or 7½ points, depending on the rules used. If black has a total of 183 points originally and the komi is 7½ points, he would have 7½ points deducted and left with only 175½ points. This ensures fairness in a game.

Note that in Ing's rules, the komi is specified as 8 points, but with black winning if both players have the same amount of territory, so effectively the komi for Ing's rules is 7½ points.

Currently, for 9x9 and 13x13 board games, there is no standardized komi.

How To Play Go

Lesson 2: Living And Dead Groups

2.1 Dead Groups

A *group* is simply a collection of two or more connected or loosely connected stones.

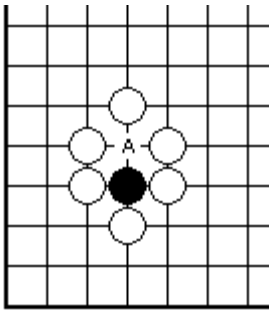

Diagram 2-1

It is obvious that the black stone in Diagram 2-1 is totally surrounded by the white stones. If it is white's turn white can play at A to remove the black stone from the board, but black can do nothing to stop white from removing that black stone. White can choose to remove the black stone whenever he likes. Hence, we say that the black stone is *dead*.

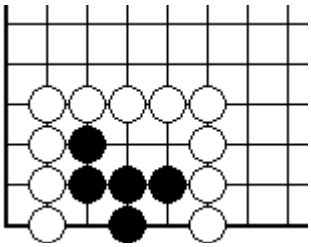

Diagram 2-2

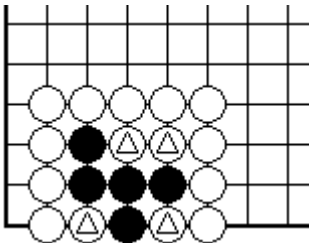

Diagram 2-3

It does not really matter how many liberties the surrounded group has. See the black group in Diagram 2-2 is completely surrounded but it still have four liberties. However, black cannot prevent white from playing the triangle stones progressively in Diagram 2-3 to remove the black group from the board. So this is proof that the black group is dead.

The question is: how do we prevent the *capture* of stones (to make the stones dead)? We can have *living* groups, that is, groups that will never be captured. To achieve this, a group needs to have at least two *eyes*. Read on the next section to find out what is an eye.

2.2 Eyes

An eye must satisfy the following two conditions:

- The group must completely surround at least one unoccupied point.
- The stones in the group must be connected (i.e. in a chain).

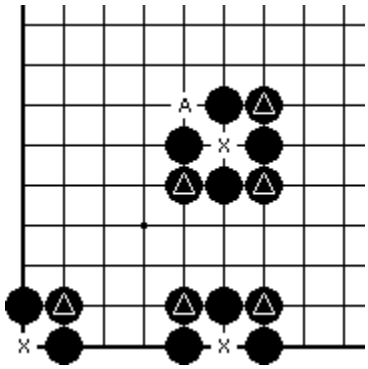

Diagram 2-4

Diagram 2-4 shows an eye in the center, an eye at the side and an eye at the corner. Notice these eyes fulfill the two conditions by surrounding a point X and all the stones are connected by the triangle stones. Note that for the eye in the center, it is not necessary for black to play at A because the other three triangle stones already ensures that the stones are all connected.

If a group surrounds a point but fails to ensure the connection of the stones, then such groups are known as *false eyes*. *False eyes look like eyes but they are not eyes.* The opposite of false eyes is known as *real eyes*; *and real eyes are eyes*.

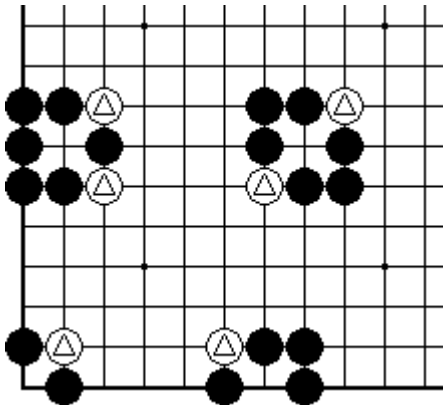

Diagram 2-5

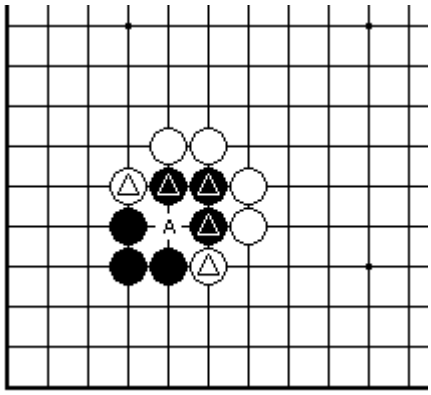

Diagram 2-6

Examples of false eyes are shown in Diagram 2-5, where the stones are not all connected in a chain due to the presence of the white triangle stones. Diagram 2-6 will further illustrate why false eyes are not eyes. The two triangle stones causes disconnection in the black group, and see that if it is

white's turn then white can play at A to remove the three black triangle stones from the board. It is obvious that is black allows white to remove the three black triangle stones from the board then there is no eye to talk about. However, if black connects at A to save the three triangle black stones then the group no longer surrounds an unoccupied point at A and thus this is not an eye either. Hence, Diagram 2-6 shows a false eye which is not an eye.

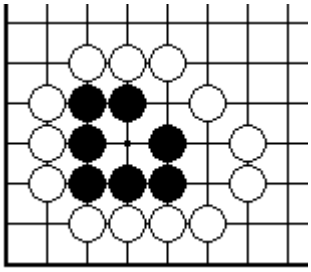

Diagram 2-7

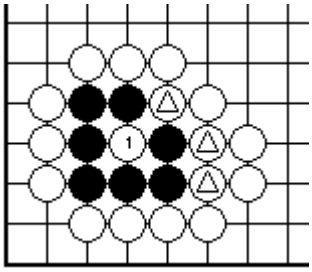

Diagram 2-8

However, a group with only an eye can still be captured. Diagram 2-7 shows a black group with only an eye but is totally surrounded by white. White can start filling out the exterior liberties of the eye by playing at the triangle stones in Diagram 2-8 and finally at 1 to destroy the last liberty of the black group to remove this group from the board.

2.3 Living Groups

A living group is a group that cannot be captured; in majority of the cases it simply means that the opponent player cannot prevent the group from having *at least two eyes*.

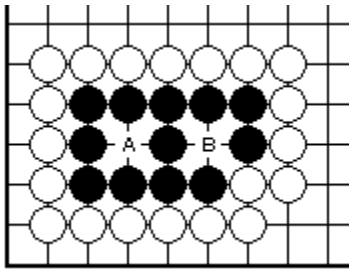

Diagram 2-9

Diagram 2-9 shows a group with two eyes at A and B. Although it is totally surrounded, white can never capture the black group. For white, playing at either A or B is suicide as the black still have a liberty from the other eye. So the black group is a living group. Warning: *the black player should never play at either A or B* – if he does so then he is killing this group by reducing his group to only one eye!

If a group has a mix of real eyes and false eyes, we count only the number of real eyes (remember false eyes do not count). If the group has two or more real eyes then this group is a living group. Otherwise, if a group possess less then two real eyes, then it cannot be considered to be living – it has to find means to create its two eyes before the opponent captures the group!

2.4 Seki

A *seki* is a condition where black surrounds white and in turn got partially or wholly surrounded by white, and surrounded groups of both colours are living.

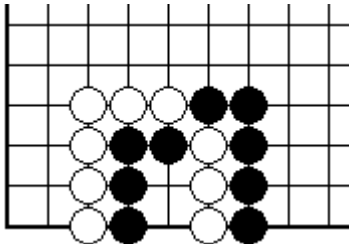

Diagram 2-10

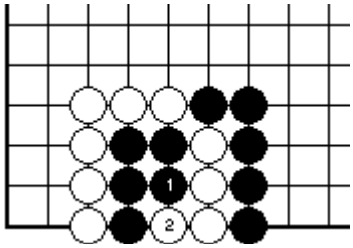

Diagram 2-11

Diagram 2-10 is an example of seki. Black has surrounded three white stones but white has in turn surrounded 4 black stones. However, black is unable to play at 1 in Diagram 2-11, because in black's attempt to capture white, white plays at 2 and captures black instead. Similarly, black cannot play at 2 either. The same goes for white: white cannot capture the four black stones as well. Hence both the black and white groups are living groups and the condition in Diagram 2-10 is a seki.

Saying that a pattern is a seki naturally assumes that the exterior groups surrounding the interior groups are living as well. If let's say that the exterior white group is dead then the interior white group is dead as well. The reason is that black is able to reduce the liberties of the exterior white group to zero and remove the exterior white group from the board. So now black is able start to reduce the liberties of the interior white group. Just like a false eye, such a condition is known as a *false seki*.

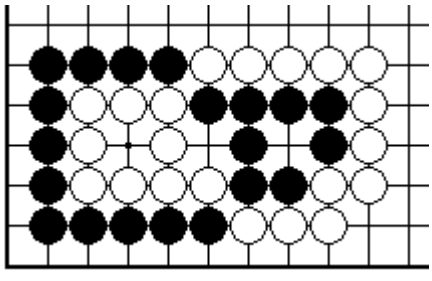

Diagram 2-12

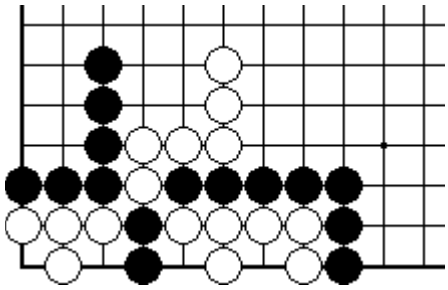

Diagram 2-13

More examples of sekis are shown in Diagram 2-12 and Diagram 2-13.

[More Stuff] – Efficiency Of Moves

When beginners capture his opponent's groups, it is noticed that they often like to waste many turns to reduce the liberties of these groups to zero and then remove the group from the board. Beginners often say that in doing so, they feel safe that they really got hold of the opponent's group. Actually, if you are confident that your opponent's group is dead, then you should not bother wasting moves to remove the group from the board. It is obviously better to play at another place more important and improve efficiency of your moves!

If a group is dead, then it is dead. Some beginners see that a group of theirs is dead, and play more and more stones to make the dead group larger and larger – it just does not make any sense and the opponent must be saying "thank you very much"! So if you recognize that a group is dead, then forget about this group and play elsewhere, hoping to recover the loss of that group from there.

There are also beginners who simply love to make eyes. Each group needs only 2 eyes to live, but they make more than 10 eyes, and continue making them. When a group has 2 eyes, then it is more efficient to play at another place, such as saving another group from being captured or to find more territories, as making 1 eye uses several moves but will produce only 1 point in territory!

Efficiency of moves is very important in Go. The more advanced you get the more important is efficiency in your games. It is always desirable to use fewer turns or stones to accomplish a certain goal, and use the excess turns or stones to do something else.

How To Play Go

Lesson 3: Capturing And Saving Groups

3.1 Atari

The move that causes the opponent's group to be reduced to only 1 liberty is known as *atari*. It means that, if the opponent does not respond to this move, his group can be removed from the board during the next move.

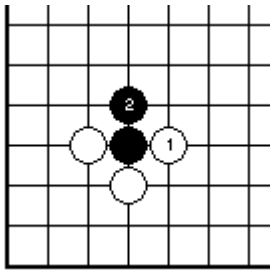

Diagram 3-1

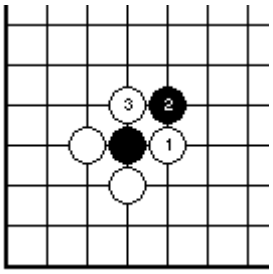

Diagram 3-2

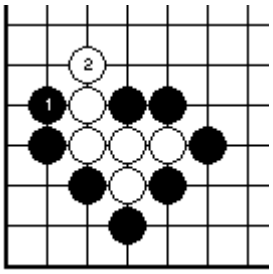

Diagram 3-3

In Diagram 3-1, the white move at 1 is known as atari. Since at the next white turn white can play at 2 to remove the black stone, black can *save* (to prevent capture) his stone by playing at 2 so that the 2 black stones have now 3 liberties. Note that when under atari, you should always save your stones by *playing at where your opponent would play to remove your stones*. If not, like Diagram 3-2, black 2 is a wrong move, resulting in white 3 removing the black stone from the board. In Diagram 3-3, black 1 is ataris the five white stones, and black can play at 2 at his next turn to remove the white group. White 2 is the correct move for saving his group.

3.2 Surrounding Groups

To capture a group, you always need to surround the group *completely*.

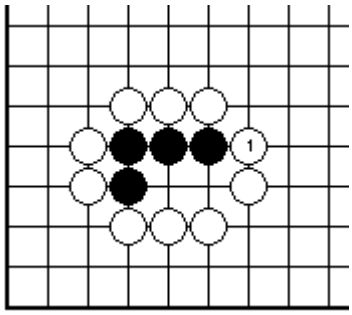

Diagram 3-4

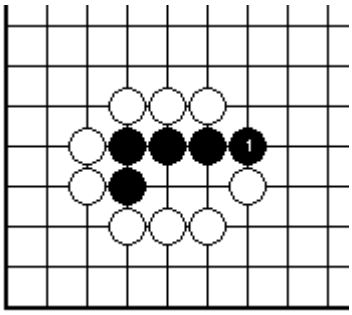

Diagram 3-5

In Diagram 3-4, white 1 causes the black group to be totally surrounded, effectively killing the black group. If it is black's turn, black should save his group by playing at 1 in Diagram 3-5.

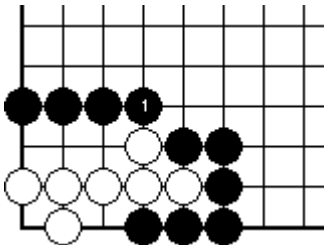

Diagram 3-6

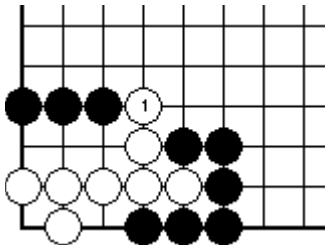

Diagram 3-7

Similarly, in Diagram 3-6, black will play at 1 to block white's only exit route to capture the white group. In Diagram 3-7, white should break out from the surrounding black stones by playing at 1 in order to save the white group.

3.3 Creating And Destroying Eyes

When a group is completely surrounded, you may be able to save it by creating at least two eyes. On the other hand, to capture a group, you need to surround it totally and also to prevent it from creating two eyes.

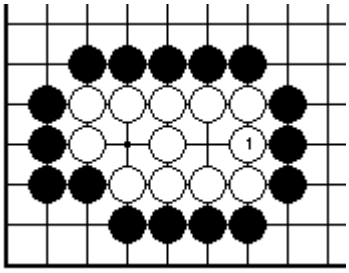

Diagram 3-8

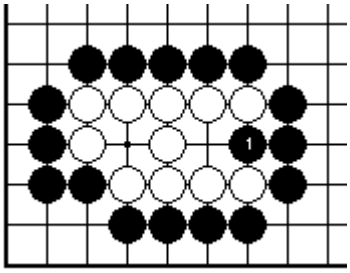

Diagram 3-9

Diagram 3-8 shows that for white to prevent his group from being killed, he needs to play at 1 to create his second eye. Now his group is safe. If it is black's turn instead, black will also play at 1 in Diagram 3-9, leaving white with a lone eye, capturing the white group.

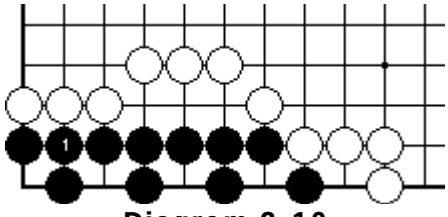

Diagram 3-10

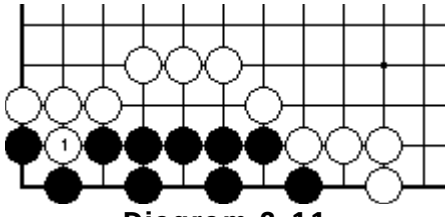

Diagram 3-11

Consider the black group in Diagram 3-10. Playing at black 1 gives black three eyes for ensuring that the black group is saved. Likewise, in Diagram 3-11, white will play at 1 so that black has only one real eye (together with three false eyes), capturing the black group.

3.4 Saving Groups By Using Defects In Surrounding Stones

Sometimes, the stones surrounding a group have some inherent weaknesses, or defects. The defects may be used to save the surrounded group.

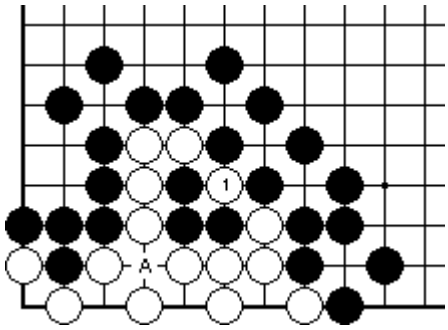

Diagram 3-12

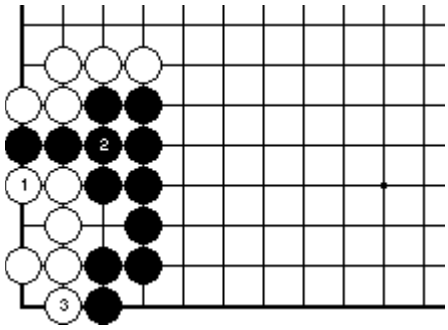

Diagram 3-13

In Diagram 3-12, it seems that white is dead with totally no chance of living. But white can play at 1, removing the three black stones from the board and hence save his group. (Of course, if it is black's turn, he should play at A to remove the four white stones from the board.)

In Diagram 3-13, black has totally surrounded the four white stones at the corner and white has no eyes at all. However, white can atari at 1 and making an eye at the same time, forcing black to save his two stones at 2, and white makes the second eye at 3. If black 2 plays at 3 to destroy the second eye, then white will play at 2, capturing the two black stones.

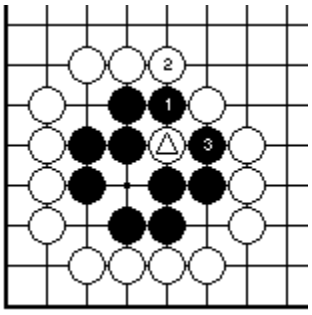

Diagram 3-14

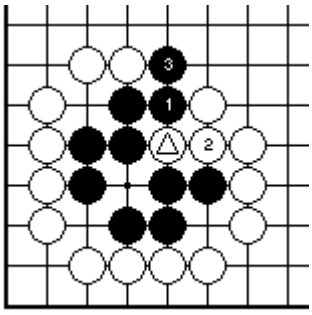

Diagram 3-15

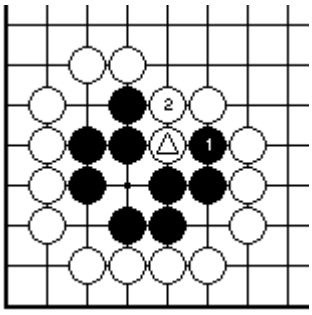

Diagram 3-16

Let us take a look at Diagram 3-14. There is some obvious defect in the white group. Black can atari the triangle white stone at 1, and at the same time threatening to break out from the surrounding white stones. If white 2

chooses to complete the surrounding barrier, then black 3 captures the white triangle stone and forms two eyes. If white chooses to save his triangle stone by playing at 2 in Diagram 3-15, then black breaks out of the surrounding white group by playing at 3. However, atari at 1 in Diagram 3-16 is a wrong move, white responds at 2 and the black group is dead.

[More Stuff] – Some Tournament Conventions

If the Go tournament rules and regulations do not specify otherwise, the following conventions are usually applied by default:

- The tournament will be played on 19x19 boards, which is the most widely used board.
- Before the commencement of the game, the player holding the white stones will grab a handful of white stones and asks the opponent to guess whether the number of stones in the hand is odd or even. If the opponent guesses correctly, then the opponent will choose the colour; else the player holding the stones will choose the colour.
- Clocks are commonly found in Go tournaments just like Chess tournaments to limit the amount of time a player has for a game. In fact, the clocks used in Go tournaments and Chess tournaments are identical. When it is your turn your time will run but your opponent's time will not. Likewise if it is your opponent's turn his time will run but not yours. Hence it is possible to limit the time to say, 1½ hours per player. If a player uses up all his time, then he loses the game.
- To start the game, the white player will press the clock. A player will press the clock after making his move. Note that if you remove your opponent's stones from the board as a result of your move, you will press the clock only after you have finished removing all his stones from the board.
- Latecomers will have their time penalized by the amount of time they are late and if they are late by a stipulated amount of time (say ½ hour), then they loses the game automatically (or *by default*, using tournament terms).
- During the commencement of a round or a game, the players and the bystanders should not talk, give comments or hints or distract other players. Bystanders should also avoid standing too near the players.
- Any disputes during a game should be referred to the organizing committee and the judges' decision is final.

How To Play Go

Lesson 4: Connecting And Cutting

4.1 Rationale

The fundamental aspect of each and every Go battle is about connecting and cutting. In general, it is a good idea to connect your groups together, and to cut your opponent's group into two or more groups.

Getting your groups connected often reduces the burden of managing two or more separate groups to managing only one large group. This is especially true when it comes to making eyes when your groups are surrounded and in trouble. As united means strength, cutting your opponent's groups often mean that your opponent is weakened and you stand to gain advantage.

Therefore, the awareness of connecting and cutting groups is vital in the game of Go.

4.2 Direct Connecting And Cutting

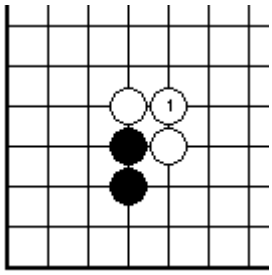

Diagram 4-1

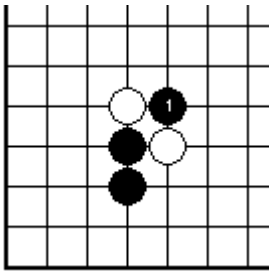

Diagram 4-2

A simple demonstration can be seen in Diagram 4-1 and Diagram 4-2. We compare the two diagrams. When white connects at 1 in Diagram 4-1, we see that white becomes strong and may even threaten the two black stones; whereas if black cuts instead at Diagram 4-2, the two separate white stones are greatly weakened and white has to manage them separately.

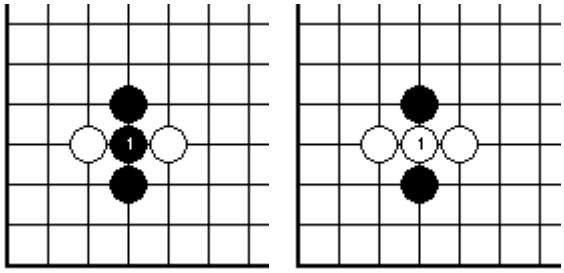

Diagram 4-3 **Diagram 4-4**

We shall now take a look at Diagram 4-3 and Diagram 4-4. It is an obvious example of how connecting and cutting makes a huge difference in the game. In Diagram 4-3, black connects at 1, leaving the two disconnected lone white stones with their survival threatened. The same thing goes for Diagram 4-4 should white connects at 1 instead.

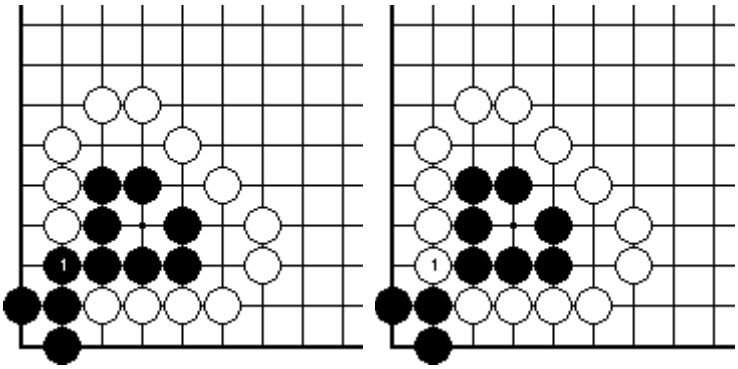

Diagram 4-5 **Diagram 4-6**

Suppose it is black's turn and he connects at 1 in Diagram 4-5. This connection ensures that this combined large group has two eyes, and therefore he lives. If, unfortunately, white gets to cut black into two groups at 1 in Diagram 4-6, then we see two separate groups with one eye each – and both groups are dead.

We observe that in most of the cases, it is usual to cut at where the opponent can connect.

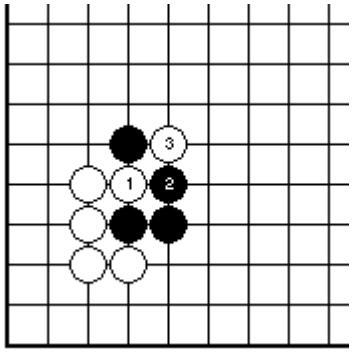

Diagram 4-7

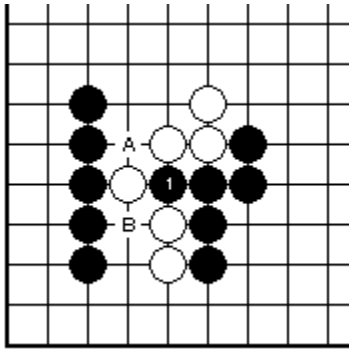

Diagram 4-8

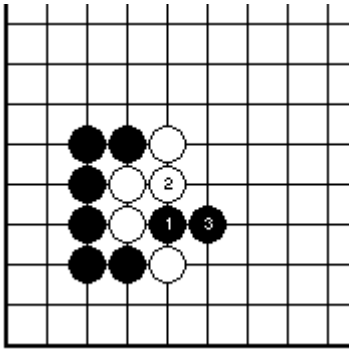

Diagram 4-9

The connection of the three black stones in Diagram 4-7 is not complete. Hence, white is able to cut black into two by playing at 1. Black answers by blocking white's advance at 2, but white can sever the connection at 3, leaving black with two disconnected groups.

See Diagram 4-8, and it is rather obvious that white can connect his stones at 1 if is his turn to play. But now it is black's turn, so black will squeeze at 1, causing white to have two points for cutting at A and B. Unfortunately, white cannot connect at A and B during a turn: if white plays at A, then black plays at B; if white plays at B, then black plays at A. In any case, the two white stones at the bottom is disconnected.

In Diagram 4-9, black can cut white at 1. When white saves his two stones at 2 and ataris black 1, black can play at 3 to save black 1 and ensures that white is cut into two. Of course, black can elect to play at 2 to cut white in the first place.

4.3 Connecting By Capturing

Sometimes, the opponent's stones cutting a player's stones have some weaknesses. In many cases, these are presented in the form of stones that can be captured. So, if the opponent's stones that prevent the connection of a player's groups can be captured, then the player's groups are connected.

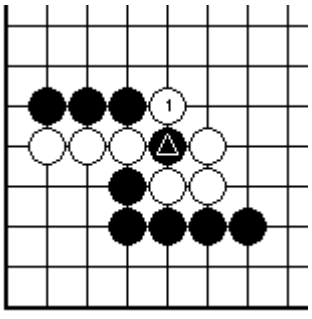

Diagram 4-10

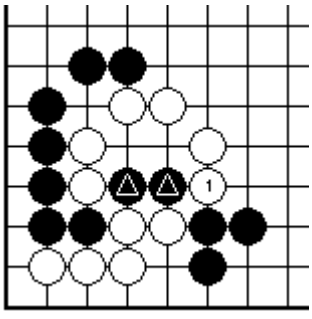

Diagram 4-11

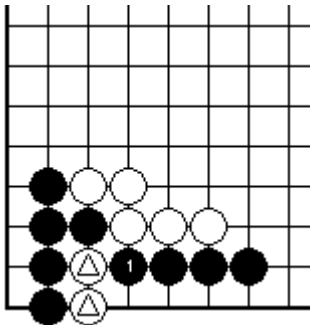

Diagram 4-12

The black triangle stone in Diagram 4-10 seems to cut white into two groups, so white is in trouble. Unfortunately for black, the triangle black stone is under atari. So white 1 removes that stone from the board, and thus gets his two groups connected.

Yet another example is seen in Diagram 4-11. When white captures the two black triangle stones with 1, the interior and exterior white groups are now merged as one and now white is in an advantageous position.

We notice that in Diagram 4-12, the two white triangle stones separate the two black groups. However, white has its own defect: black cutting at 1 will kill the two white triangle stones. With the two stones dead, the two black groups are now connected.

4.4 Cases When Cutting Is Ineffective

We cannot say that cutting the opponent's group is 100% effective. Some groups just cannot be disconnected despite the apparent weakness in their links. There are other cases where cutting just will not make any difference in the opponent. In other situations cutting may even put the opponent in an even better position.

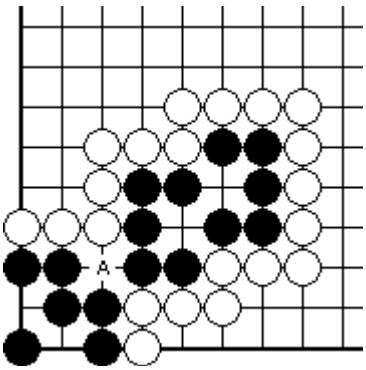

Diagram 4-13

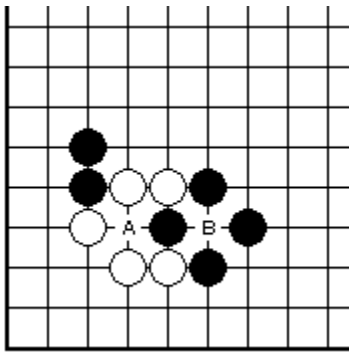

Diagram 4-14

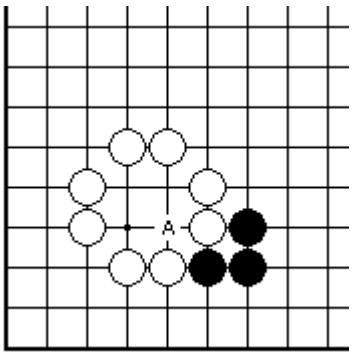

Diagram 4-15

For white to cut the black groups at A in Diagram 4-13 is totally unnecessary. The reason is that the two black groups have two eyes each, so both groups are alive. Compare this with Diagram 4-5 and Diagram 4-6 and the difference is obvious.

We notice that in Diagram 4-14, it is not possible for black to cut the white group at A. If black does so, he would be putting his two stones (including the stone at A) *in atari*, and yet it is white's turn. White can then play at B to capture these two stones. In a game, we should be on alert – always *watch out for ataris*.

We take a look at Diagram 4-15 and we can see a cutting point at A. But it is useless for black to cut at A, as it simply introduce a dead black stone at A. To make things worse, if black really plays at A, white can just ignore and play elsewhere.

The above three diagrams, Diagram 4-13, Diagram 4-14 and Diagram 4-15, demonstrates cases when cutting is ineffective. Hence, we should avoid playing such kinds of moves. As for the opponent player, connecting the groups in these three diagrams are not needed – wasting moves as well.

4.5 Keeping Stones Connected

As explained in the beginning of this lesson, it is usually a good idea to *keep your stones connected*. This statement is especially true for beginners. However, it is very often that we see beginners play a lot of nonsensical moves that result in their stones all scattered and separated. This will result in a large advantage for the opponent, who will have pleasure capturing the many scattered groups or manipulate these groups to his own benefit. This section is written specially for such beginners, in the hope that they will commit less such mistakes.

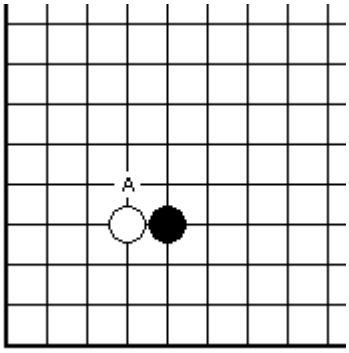

Diagram 4-16

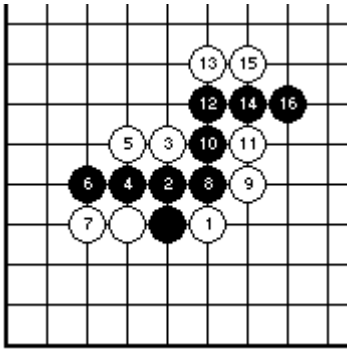

Diagram 4-17

Consider the situation in Diagram 4-16, and it is white's turn now. As the reader, it may be interesting to note how you would play. Playing at A is a suggested move which keeps the white stones connected.

Diagram 4-17 shows typical moves of some beginners. They think that from white 1 onwards, they are trying to attack the black stone or to capture it. All the black moves are very natural and totally correct, keeping his stones in one piece and evading white's attack. At the end of the sequence after black 16, we can see very clearly that black is in one chain while white is all scattered and separated, with places for black to cut everywhere. This is not the way white should play.

[More Stuff] – Handicap Games

When the two players with different standards are playing Go, it is usual for the stronger player to give *handicap* to the weaker player so that the game would be fairer. For players with very small difference in strength, it is usual to allow the weaker player to take black *without komi*. Otherwise, the weaker player will be given a handicap of two to nine stones. The weaker player takes black and places two to nine stones at the marked points (known as *star points* or *handicap points*), after which white will play his first move.

By default, these are the handicap points where to place the handicap stones (from black's viewpoint):

- Two stones: upper right and lower left corners.
- Three stones: upper right, lower left and lower right corners.
- Four stones: all four corners.
- Five stones: all four corners and the center point.
- Six stones: all four corners, left and right sides.
- Seven stones: all four corners, left and right sides and center point.
- Eight stones: all handicap points except the center point.
- Nine stones: all handicap points.

How To Play Go

Lesson 5: Ko And Ko Threats

5.1 Ko Threats

Let us consider Diagram 5-1. When black 1 takes the ko, white cannot take back the ko immediately. How should white respond?

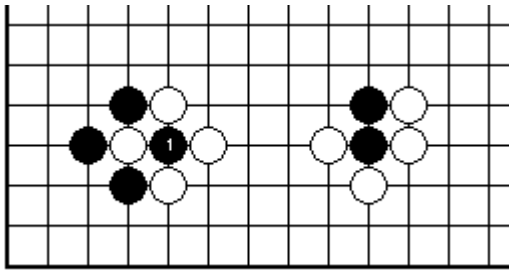

Diagram 5-1

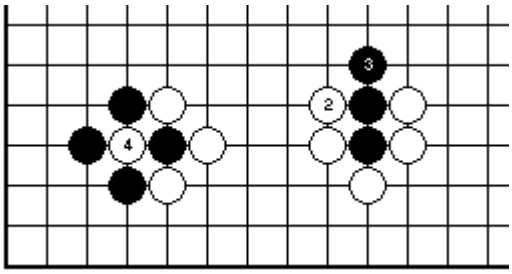

Diagram 5-2

White can try to play at 2 in Diagram 5-2 and atari the two black stones. If black saves the stones at 3, then white can now take back the ko at 4 as one turn has passed since black 1 takes the ko. Definitely, if black 3 connects the ko at 4, then white will play at 3 to capture two black stones as compensation for losing the ko.

Hence, white 2 in Diagram 5-2 is also known as a *ko threat*. A ko threat is some kind of a forcing move, asking for compensation elsewhere for losing the ko. If the opponent does not like this deal, then the player gets to take back the ko. Usually the number of ko threats each player has will decide the outcome of the ko – the one with more ko threats wins.

5.2 Applications Of Ko

The scope of the ko can range from the very small endgame ko to the ko that threatens connection to the life and death ko to those that practically decides the outcome of a game.

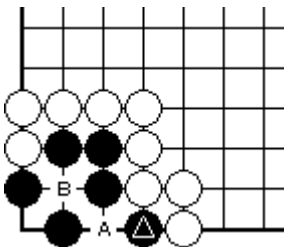

Diagram 5-3

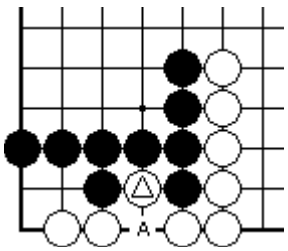

Diagram 5-4

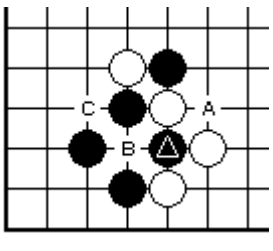

Diagram 5-5

Diagram 5-3 shows a black group in the corner whose life and death is threatened by a ko. If black wins this ko then he wound certainly connect at A. If white wins this ko white wound occupy both A and B (remove three black stones from the board) to kill black.

Diagram 5-4 shows a ko that threatens white's connection. If white wins this ko then he connects at A to save the two corner stones. If black manages to take the ko at A and then connect at the position of the triangle white stone then he would capture the two corner stones.

Diagram 5-5 shows a large ko with great damage potential to both players. If black wins this ko then he wound play at A – and the remaining white stones are rendered totally useless on a strong black group. Similarly, if white can win this ko then white will take the black stones at B and C – and the rest of the black stones are also useless on a very strong white group. This ko is big, so whoever wins this ko is likely to gain considerable advantage in the game.

5.3 Impact Of A Ko

The outcome of a ko may greatly impact a game, or leave no impact at all. Some kos may even favour one player.

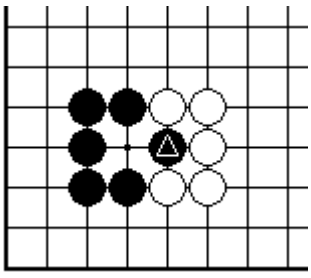

Diagram 5-6

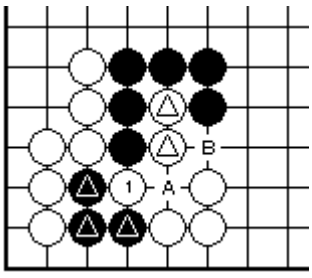

Diagram 5-7

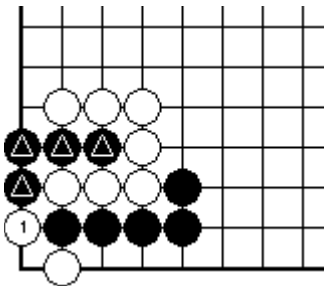

Diagram 5-8

Diagram 5-6 shows a very small ko usually referred as the *endgame ko*. Apart from the benefit of capturing one stone there are no other benefits. Such a ko is best left to the end of a game to fight over.

Sometimes you need to pay a price to fight a ko. In Diagram 5-7 white 1 throws in a stone to fight a ko, in the hope of capturing the three triangle black stones by connecting at A next. However, when black takes the ko at A, the two triangle white stones are under atari. So white risks losing the two triangle stones if white loses this ko (black plays at B to end the ko). This is why sometimes you have to watch the timing to start a ko.

An example of a ko tipped in favour in one player is shown in Diagram 5-8. White 1 starts a ko, and if black loses this ko, black loses the four triangle stones as well. If white loses this ko he has nothing to lose. Hence this ko is

advantageous to white, and is also referred as a *picnic ko*. Diagram 5-3 and Diagram 5-4 are also examples of picnic ko.

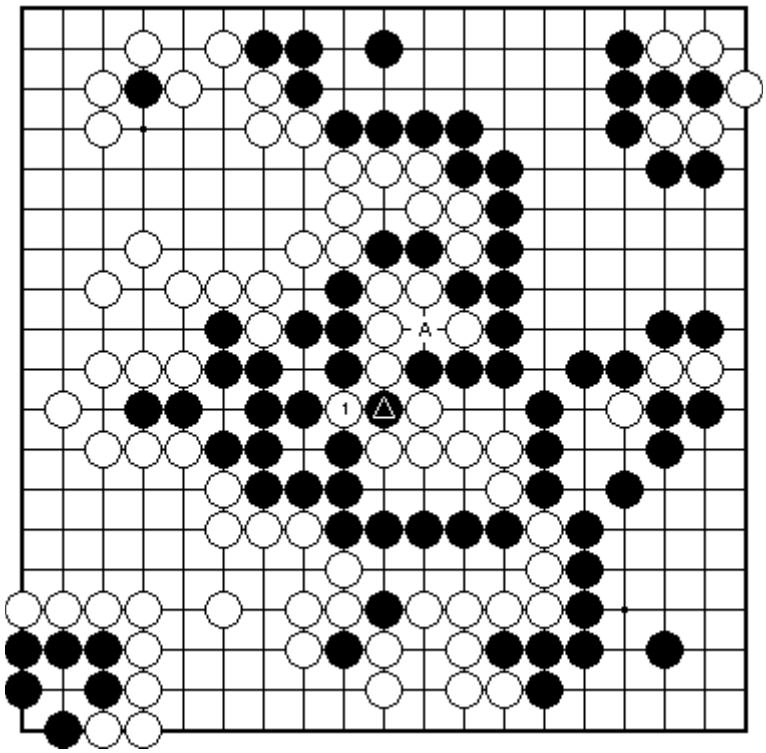

Diagram 5-9

Consider the situation in Diagram 5-9. If black wins this ko then black plays at A, taking five white stones and capturing the middle white group. If white wins this ko then white connects at the position of the triangle black stone, effectively killing the entire middle black group. As you can see, this ko effectively decides who will be the winner of this game. Such ko is known as the *all-dominating ko*. When white 1 takes the ko, black has no ko threats to this ko. Hence white will connect the ko and win this game straight away.

5.4 Local Ko Threats

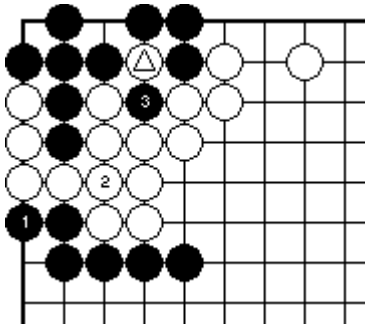

Diagram 5-10

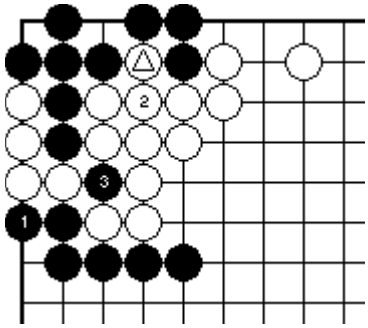

Diagram 5-11

In Diagram 5-10, white has just taken the ko at the triangle white stone in his attempt to kill the corner black group. However, black can atari at 1 as a ko threat, and white cannot resist it and must connect at 2. Then black can take back the ko at 3. Diagram 5-11 shows why white cannot connect the ko at 2. Black will then capture four white stones with 3. This exchange resulted in white failing to kill black and losing four stones instead. Black 1 is known as a *local ko threat* – the ko threat occurs in the same local area of the ko and the opponent must answer the ko threat to achieve his objective.

5.5 Multi Stage Ko

Sometimes the ko exists in such a way that to win the ko, one must win the first ko, which creates a second ko which must be won, and in turn may produce yet another ko that has to be won, and so on. Such kos are called *multi stage ko*.

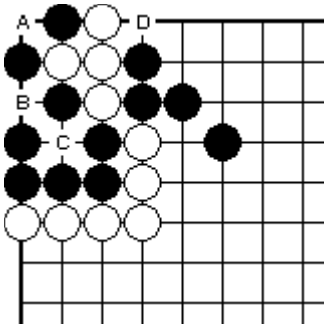

Diagram 5-12

Diagram 5-12 shows an example of a two stage ko for white. In order to win this ko, white has to win the ko at A, followed by the ko at B, before taking all the black stones at C. If black wins this direct ko fight, he would take the four white stones at D.

5.6 Approach Ko

Sometimes the ko exist in such a way that one must ignore more than one ko threat in order to win the ko. In such cases we call the ko an *approach ko*. A ko where either player needs to ignore only one threat to win (i.e. not a multi stage ko or approach ko) is also called a *direct ko*.

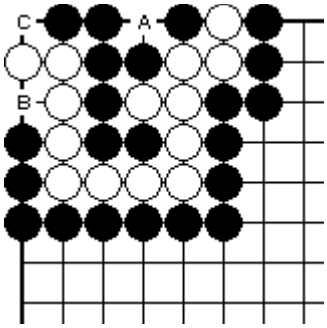

Diagram 5-13

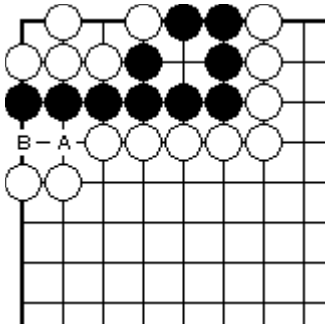

Diagram 5-14

In Diagram 5-13, white cannot play at C – this would be suicidal as black will then play at B to take the white group off the board. However, this is also a two move approach ko for black as he needs to win the current ko fight, then play at B to make it into a direct ko. Thus he needs to ignore two ko threats of white's before he can end this ko by playing at C to kill the white group.

A three move approach ko is shown in Diagram 5-14. In this diagram white has to play at A and B before the ko is turned into a direct ko fight. We can also say that this ko is in favour for black.

If a ko arises and it is a many stage ko (say five) in favour to one player, in 99% of the case, it is as good as saying that the player wins this ko. That is because the opponent is not likely to have so many ko threats. Even if he has, the player will be able to play many consecutive moves at other places to make up the loss due to losing the ko.

5.7 Double Ko

It is possible to have two kos to appear together in a system to form a *double ko*. Double ko is interesting as one player takes a ko, the other player takes the other ko and the result is back to square one.

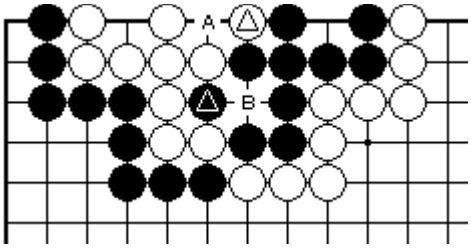

Diagram 5-15

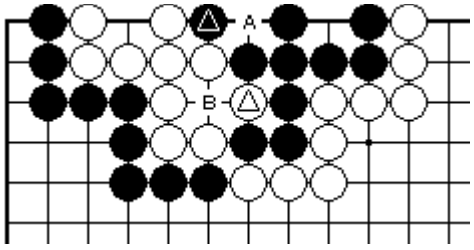

Diagram 5-16

Diagram 5-15 shows a double ko indicated by the triangle stones. Assuming black first, he takes the ko at A, causing an atari of the white group and forcing white to take the ko at B. Then the result is Diagram 5-16. Now black still want to capture white – he finds a ko threat, then takes the ko at B. But

white can now take back the ko at A, and the result reverts back to Diagram 5-15. Suppose white starts off in Diagram 15-5 and tries to capture black, then the result is still the same. *Ruling: since neither black nor white can capture the other group, this condition is treated as a seki.*

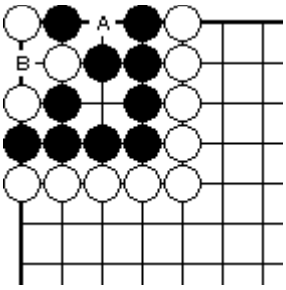

Diagram 5-17

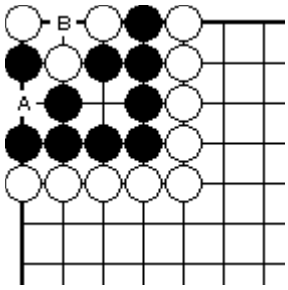

Diagram 5-18

Another double ko is shown in Diagram 5-17. Black can take the white stones off the boards y playing at B, but if white plays at A, then black will definitely take the ko at B – resulting in Diagram 5-18. Still, black can capture the white stones at B. However, it is also useless for white to try to find a ko threat, then take the ko at A, for black will respond at B, and the situation goes back to Diagram 5-17 again. *Ruling: as white can never kill black, and black can kill white as and when black likes, this condition is treated as the corner white stones considered dead, and the black group alive.*

5.8 Triple Ko

Like a double ko, a *triple ko* is one that has three kos in the system.

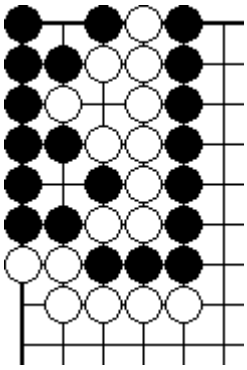

Diagram 5-19

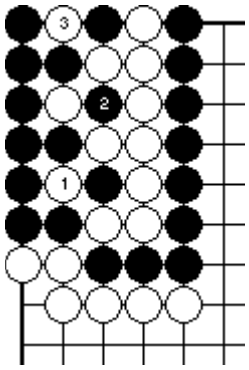

Diagram 5-20

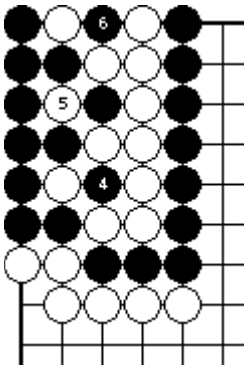

Diagram 5-21

Diagram 5-19 is a diagram containing three kos, or rather a triple ko. What is the result, assuming white goes first? So in Diagram 5-20, white will take a ko at 1, putting black in atari. As black cannot take white 1, so he takes at 2 instead. Similarly, white takes the ko at the top with 3. We continue in Diagram 5-21: black plays at 4, white 5, black 6, and we are back to Diagram 5-19. It is white's turn again, so the cycle repeats itself.

Usually the Chinese or Japanese rule is applied during a game. *The ruling says that if both players do not give up on a triple ko, the game is considered a draw.* (Note: under Ing's rule, a triple ko must be treated like a normal ko – when a player takes a ko in a triple ko, then the opponent player must wait one turn before he can take back any of the kos. That is, when white 1 in Diagram 5-20 takes a ko, black must find a ko threat before taking the ko at 2. This rule will prevent draw games arising from triple kos.)

[More Stuff] – The Strength Of A Go Player

Go players can be classified into two types: amateur and professional. Amateur players usually play Go just for fun, but professional players play Go to earn a living through major Go tournaments (the prizes are huge – definitely not less than chess or sports competitions!). Nonetheless, there is a way to indicate the strength of a Go player. The term *Kyu* is given to weaker players while the term *Dan* is given to stronger players.

For amateur players, 30 Kyu is the strength of players who just began to play Go. As they progress, the Kyu number decreases until 1 Kyu. Then the next rank is 1 Dan. As Dan players get stronger, the Dan number increases. An amateur 6 Dan player can be considered a high Dan amateur player.

For professional players, the same ranking system is used, but amateur 6 Dan may not even qualify as a professional Kyu player. World Go champions have a ranking of professional 10 Dan.

How To Play Go

Lesson 6: Big Eyes

6.1 Two-Space Eyes

A *big eye* is simply an eye that contains more than one space, or point. In this lesson, we shall investigate the status (i.e. whether a group is living or dead) of groups containing a big eye (with no other eyes) when surrounded. Important: the big eyes introduced in this lesson are groups with *all its stones solidly connected in a chain* – big eyes with cutting points may have results differing from those given in this lesson.

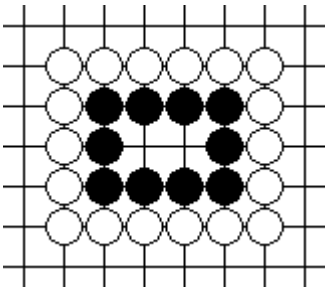

Diagram 6-1

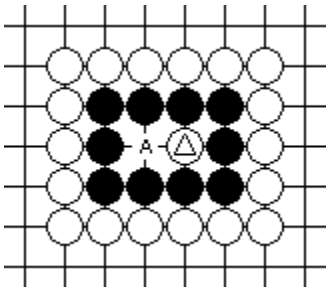

Diagram 6-2

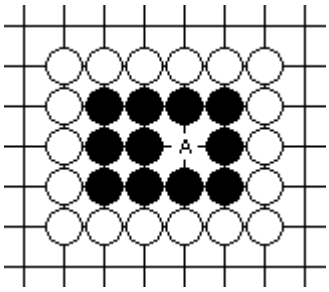

Diagram 6-3

Diagram 6-1 shows a two-space eye. Is it one eye or two eyes? However, unlike a group with two eyes, it is legal for white to play the triangle stone (known as the *placement*) in Diagram 6-2. Assuming that the group is surrounded without outside liberties as shown in Diagram 6-2, white can play at A during the next turn to remove all the black stones from the board. But if black plays at A, the result is Diagram 6-3, which is clearly only one eye, and white can play at A to capture all the black stones. So we go back to the question related to Diagram 6-1: the two-space eye is only one eye. *Verdict: when surrounded, the two-space eye is a dead group*.

6.2 Three-Space Eyes

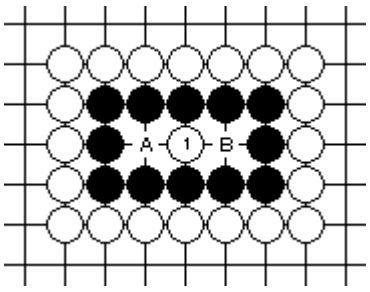

Diagram 6-4

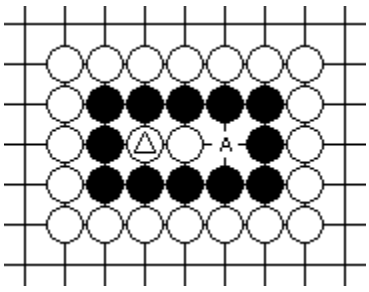

Diagram 6-5

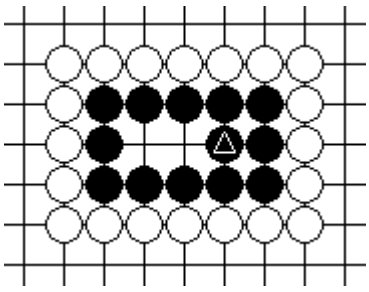

Diagram 6-6

There are two types of three-space eyes: *straight three* and *bent three*.

A straight three is shown in Diagram 6-4. If black plays at 1, he definitely has two eyes and lives, so what if white plays the placement at 1? Definitely, black wouldn't want to play at A or B – this will leave black with a dead two-space eye described in section 6.1, so he allow white to prove that the black group is dead. So white plays at the triangle stone in Diagram 6-5, and the entire black group is under atari, which means that black will have to play at A – resulting in Diagram 6-6, which is a dead two-space eye. *Verdict: if black plays first at 1 in Diagram 6-4, black will live; if white plays first at 1 instead, white will kill black.*

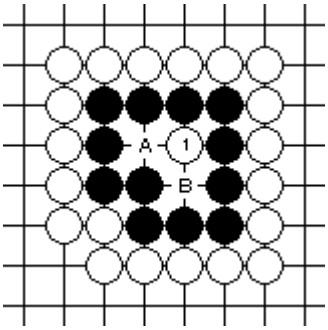

Diagram 6-7

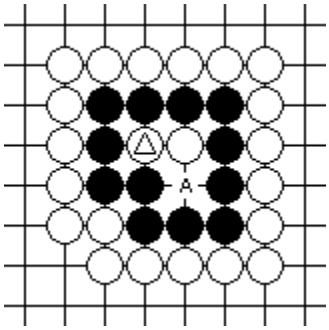

Diagram 6-8

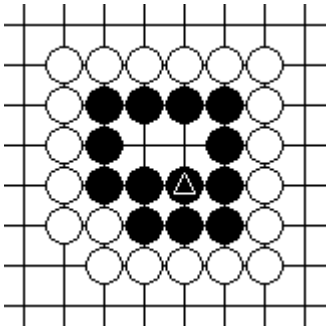
Diagram 6-9

The next type, bent three is shown in Diagram 6-7, where the vital point for both players is at first. Like straight three, *if black plays first black lives; if white plays first black dies*. Suppose black plays at either A or B, black will be dead with a two-space eye. Hence, white can play the triangle stone in Diagram 6-8, putting black in atari, forcing black to play at A, resulting in Diagram 6-9 (a dead two-space eye).

6.3 Four-Space Eyes

There are the following kinds of four space eyes: the T-shape, the 2x2 square, *straight four* and *bent four*.

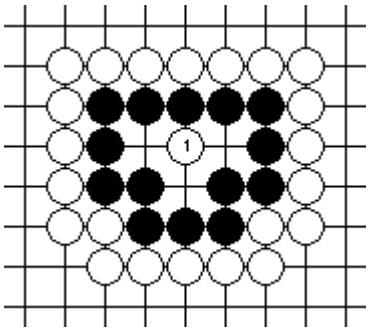

Diagram 6-10

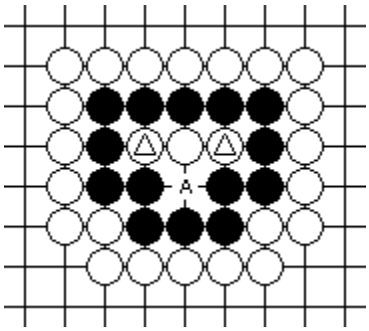

Diagram 6-11

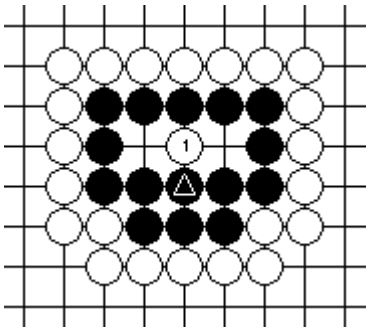

Diagram 6-12

First, we introduce the T-shape four-space eye – with the vital point in the middle of the eye at 1 in Diagram 6-10. If black plays anywhere inside the eye after white plays 1, he would only be reducing his eye to straight three or bent three. However, white is able to play at the marked stones as shown in Diagram 6-11 and put black in atari, so black must play at A to capture the three white stones. But it is white's turn again with the black group reduced to straight three, and so white plays the placement at 1 in Diagram 6-12 and black is dead. The status of the T-shape four-space eye hinges on whoever plays first: *black first will live, white first will kill*. (Note: white can also elect to reduce the black eye into a bent three rather than a straight three and the effect is exactly the same.)

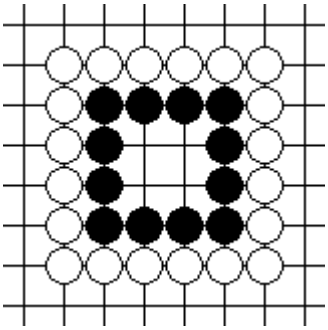

Diagram 6-13

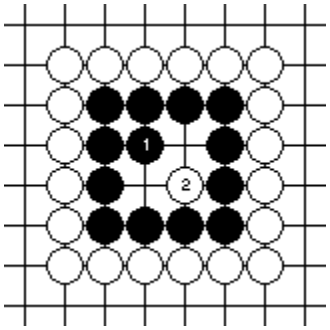

Diagram 6-14

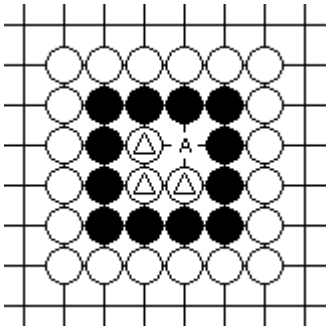

Diagram 6-15

The 2x2 square four-space big eye (Diagram 6-13) is *dead when completely surrounded*. No matter what move black plays inside the big eye, it becomes a bent three. Diagram 6-14 illustrates this: when black plays at 1, white will play at 2 in the middle of the bent three and black is still dead. However, white can play the triangle stones in Diagram 6-15, forcing an atari, and when black takes the three triangle stones, the group becomes a bent three and it is still dead.

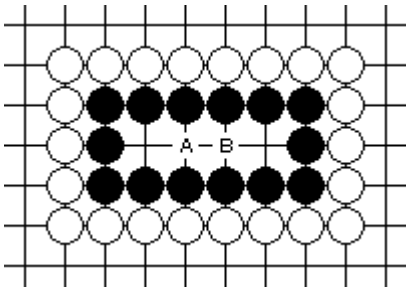

Diagram 6-16

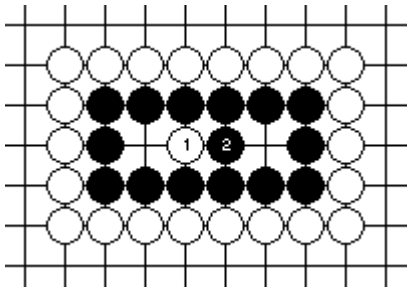

Diagram 6-17

The black group in Diagram 6-16 is a straight four, which is *always a living group*. Even when surrounded, it is impossible for white to play both A and B on a turn. Look at Diagram 6-17. When white plays at 1, black plays at 2, and we see black has two eyes. If white 1 is played at 2, then black plays at 1, and the result is still the same. However, if white is allowed to play at both 1 and 2, then black dies from a straight three.

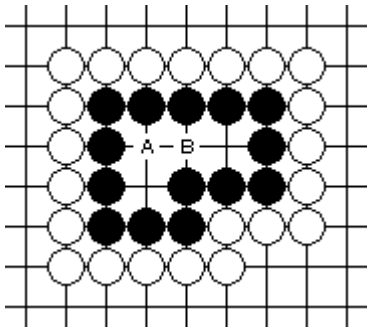

Diagram 6-18

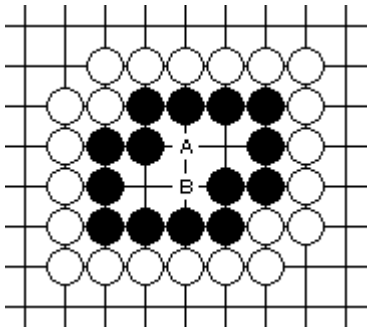

Diagram 6-19

Both Diagram 6-18 and Diagram 6-19 are diagrams of bent four, with the same result of straight four – *can never be killed*. In both diagrams, black will get to play at either A or B no matter which placement move white plays.

6.4 Five-Space Eyes

This section discusses the *bulky five* and *flower five*. Since straight four and bent four are already alive, we can infer that straight five, bent five, straight six, bent six and so on are all alive, so they will not be discussed here.

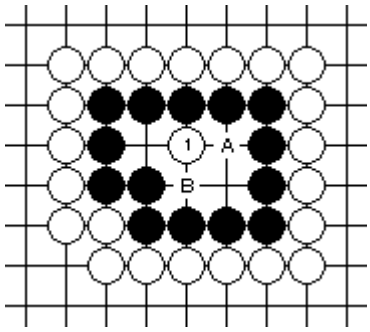

Diagram 6-20

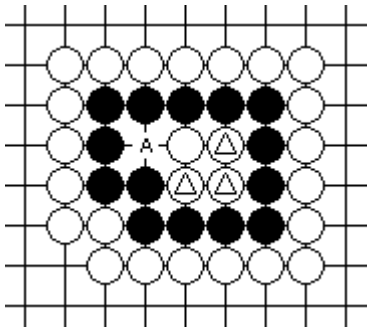

Diagram 6-21

We start off this section with the bulky five, shown in Diagram 6-20. Like most of the other types of big eyes, *if white first then black dies, if black first then black lives*. The vital point is at 1. After white plays at 1, if black plays at A, then white plays at B; and vice versa, if black plays at B, then white plays at A. For the case if black chooses not to play anything, white can play the triangle stones in Diagram 6-21 to force an atari, forcing black to remove the four white stones from the board, and reducing the black eye into the dead 2x2 square big eye. (Alternatively, white can also reduce black into the T-shape big eye.)

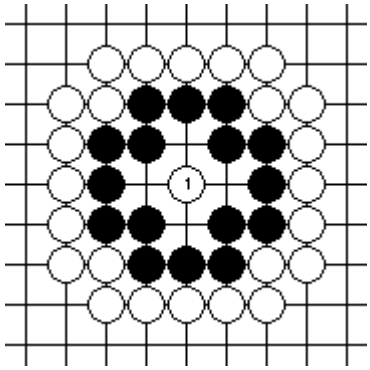

Diagram 6-22

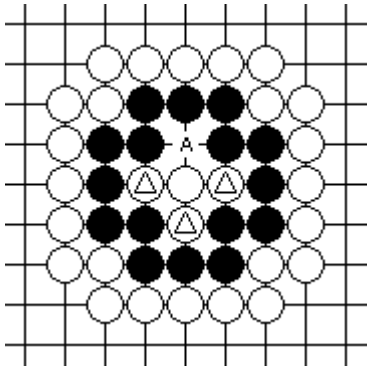

Diagram 6-23

Diagram 6-22 shows a flower five, and *if white plays at 1, the black group is killed*. Conversely, *if black plays first at 1, black is alive* with four eyes. Diagram 6-23 shows how white can play the triangle stones to reduce the black eye into a dead T-shape four-space big eye by forcing an atari.

6.5 Six-Space Eyes

Here we will discuss the *flower six* and the 2x3 rectangle six-space eye.

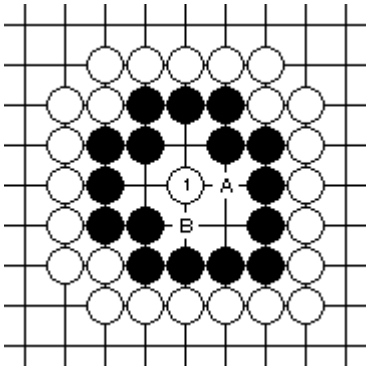

Diagram 6-24

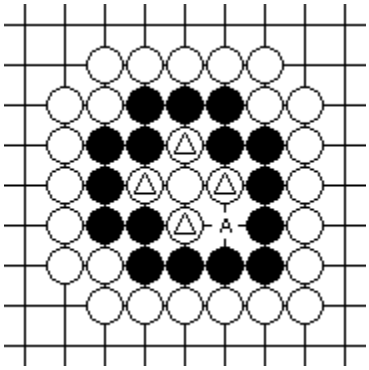

Diagram 6-25

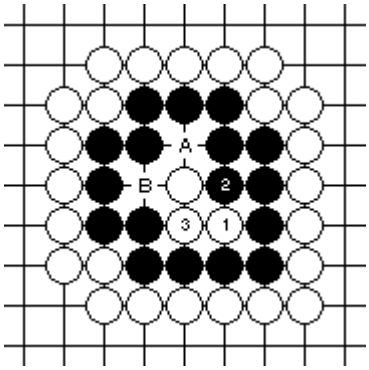

Diagram 6-26

Suppose black plays first at 1 in Diagram 6-24, then black gets three eyes and lives. So white has to play at 1 in order to kill black. Now if black plays at A, then white will play at B, and vice versa. Diagram 6-25 shows that white can reduce the black group into flower five by playing at the triangle stones. *Verdict: white first will kill black, black first will live.* However, one must exercise caution in reducing this black eye: if white carelessly plays at 1 in Diagram 6-26, then black ataris at 2, forcing white to connect at 3, and the result is a seki. Definitely black won't reduce his eye to bent three by playing at either A or B, but white can't play at A or B to black live by having a bent four living group. Hence both the black and white groups are alive, and it is a seki. (Note: white can also reduce a flower six into a bulky five instead.)

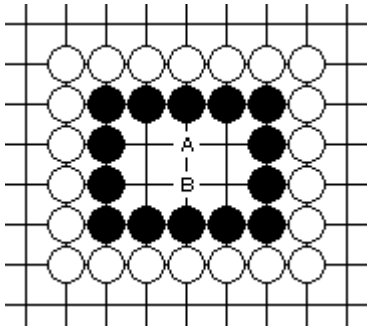

Diagram 6-27

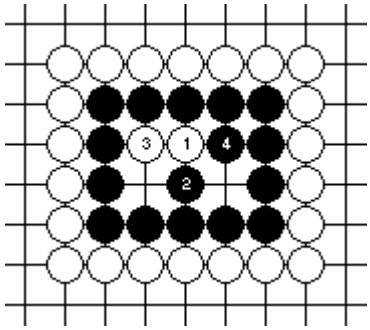

Diagram 6-28

A 2x3 rectangle six space eye is *alive even when totally surrounded*. Black will live because he will get one of the points A and B in Diagram 6-27, but if white occupies both, black dies from a bulky five. Diagram 6-28 shows how black will live. In the sequence up to 4, black clearly has two distinct eyes. If white 1 is played at 2, then black will play at 1. If white 3 is played at 4, then black will play at 3. (Even if black does not play at 4 and allow white to play at 4, the result is a seki – but black will not have any territory.)

6.6 Special Cases In The Corner

The bent four and the 2x3 rectangle six-space eyes are usually living groups. However, if such eyes occur in the corner, the *status* (whether the group is living or dead) may change.

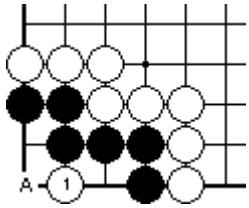

Diagram 6-29

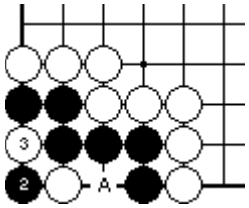

Diagram 6-30

Diagram 6-29 shows a bent four in the corner, and black has no exterior liberties. When white plays at 1, black must play at A in order to survive. However, as black does so in Diagram 6-30, white can play at 3 to take black 2 off the board. The survival of the whole group will now depend on the outcome of this ko: if white wins this ko, white will play at A to capture the black group; if black wins this ko, black will play at A and makes two eyes.

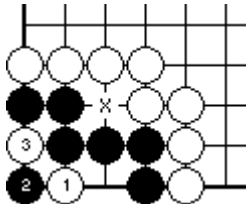

Diagram 6-31

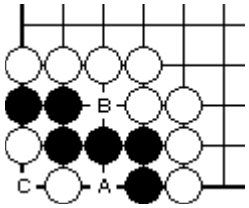

Diagram 6-32

This time we give the white group an exterior liberty in Diagram 6-31, shown as X. White will play as usual in the sequence from 1 to 3, resulting in Diagram 6-32. We see that black can't play at A, as white can take all the black stones off the board by playing at B. So black will still need to fight the ko at C. If white wins the ko he connects at C and black dies from a bent three. If black wins then he will occupy both C and A and makes two eyes.

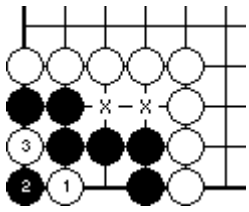

Diagram 6-33

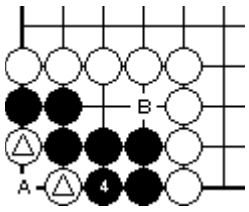

Diagram 6-34

Assuming now we have a bent four in the corner with two exterior liberties, indicated as X in Diagram 6-33. And we suppose that white still plays at 1 and 3 as before. Now we look at Diagram 6-34: black can now play at 4 and capture the two triangle stones. This time round white can't connect at A: this is suicide. So when white ataris the black group at B, black will play at A to form two eyes.

Conclusion: If the bent four in the corner has less than two exterior liberties and the opponent plays first, the result is a ko. Otherwise, the group has at least two exterior liberties and lives unconditionally (i.e. without a ko).

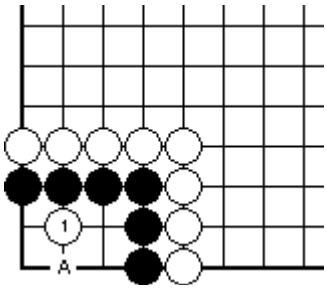

Diagram 6-35

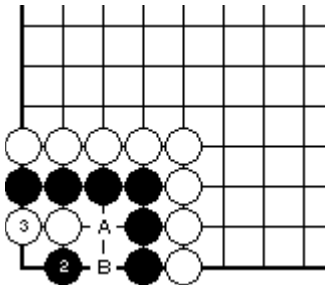

Diagram 6-36

A 2x3 rectangle six-space eye is by right a living group, but things get different when it appears in a corner. Diagram 6-35 shows such a group without exterior liberties. White 1 will kill black. Naturally, black has to play at A, which is 2 in Diagram 6-36, but white answers with 3. Now black is short of liberties: if he plays at A, then white can take the black stones off the board with B. However, black cannot play at B either, as he will be dead with a bent four with both vital points occupied by white.

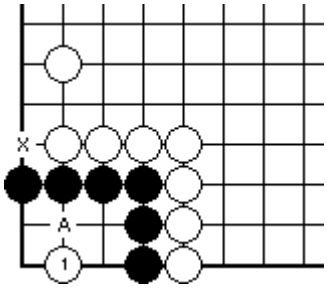

Diagram 6-37

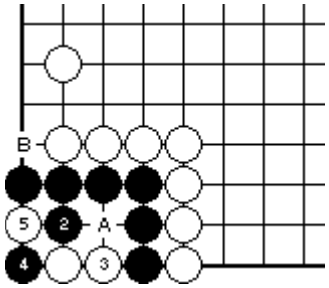

Diagram 6-38

Diagram 6-37 shows the case where black has one liberty at X. This time round white should play at 1 instead of A. Black should answer white 1 with A, but what happens? See Diagram 6-38. White will play at 3, forcing black to play at 4, and then white 5 takes a ko. Notice that like the bent four in the corner, black is short on liberties and therefore cannot play at A. If black wins this ko, he will live by taking the white stones at A.

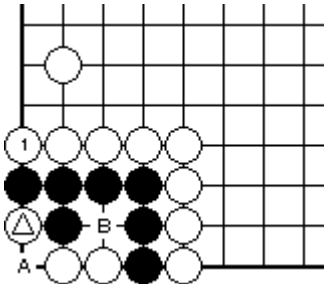

Diagram 6-39

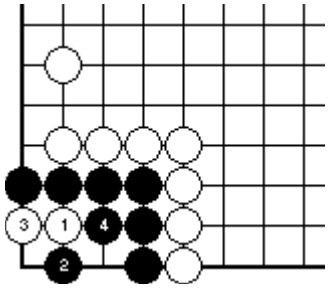

Diagram 6-40

For white, this is a two move approach ko. Even if white wins the ko in Diagram 6-38, white must still play at 1 in Diagram 6-39 to fight another round of ko. Thus if white wins this round of ko he will play at B and remove all black stones from the board. The placement at 1 in Diagram 6-40 is a mistake for white. Black responds as usual, but because he has an extra exterior liberty, the black group is alive. This is a failure for white.

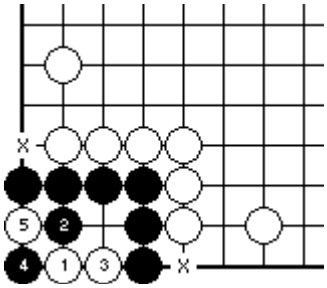

Diagram 6-41

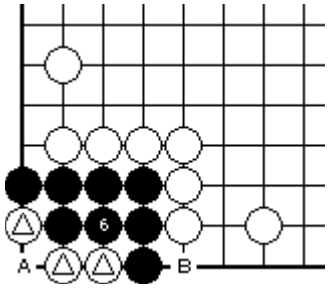

Diagram 6-42

Diagram 6-41 shows the black group with two exterior liberties shown as X. If white plays 1 at 2, then the result would be the same as Diagram 6-40. So if white plays from 1 onwards and takes the ko at 5, black can play at 6 in

Diagram 6-42. This is similar to Diagram 6-34: for white to play at A is suicide; but if white ataris at B, black will play at A and remove the triangle stones from the board. In short, the black group cannot be killed.

Conclusion: For a 2x3 rectangle six-space eye, if it has no exterior liberties, then it can be killed. If it has one exterior liberty, then it may be turned into a two-stage ko. If it has two or more liberties, then it is alive.

[More Stuff] – Big Eyes With Defects

At the beginning of this lesson it is stressed that for the results in this lesson to be valid, the big eye must be made up of stones that are *solidly connected in a chain*. If not, there are chances that the result might not hold. Two examples are given below.

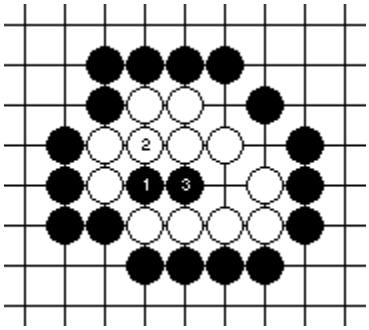

Diagram 6-43

Diagram 6-43 shows a bent four, but unfortunately not all white stones are solidly connected. Here black can atari at 1, forcing white to connect at 2, and black extends at 3 into the middle of the straight three. White is dead.

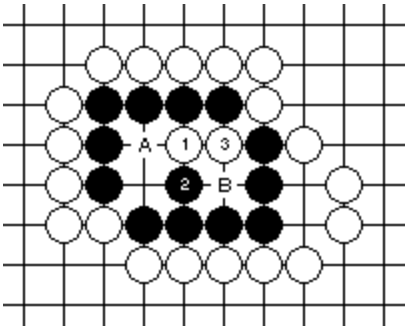

Diagram 6-44

Now Diagram 6-44 shows a supposedly living six-space eye, but it contains cutting points. With white's placement at 1, even if black responds at 2, white can cut at 3, so that black is unable to play at A. Now, if black plays at B, white will kill him with a straight three by playing at A.

How To Play Go

Lesson 7: Basic Capturing Techniques

7.1 Atari Techniques

Many times you try to atari a group, but your opponent simply adds another stone to it and avoids capture, right? However, under some circumstances, you can make use of the surrounding stones you have, and atari your opponent's stones so that they have to run smack into your surrounding stones, and bingo! You have all of them captured in your network of stones.

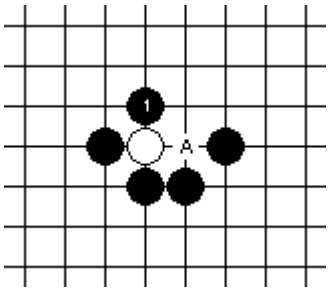

Diagram 7-1

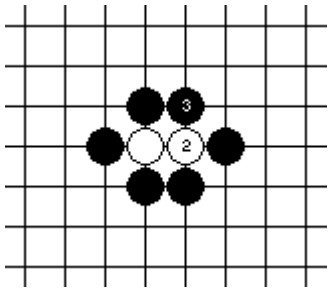

Diagram 7-2

In Diagram 7-1, black 1 makes use of his four-stone network to capture the white stone. If he ataris at A instead, then white will escape at 1. Now black is aiming to capture the stone at A. However, if white foolishly plays at 2 in Diagram 7-2 in his bid to save the stone, he will be in for an even bigger capture when black plays at 3.

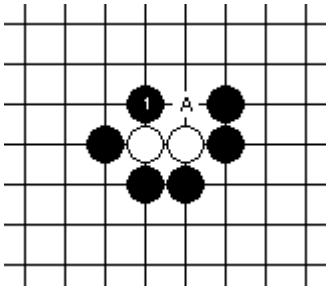

Diagram 7-3

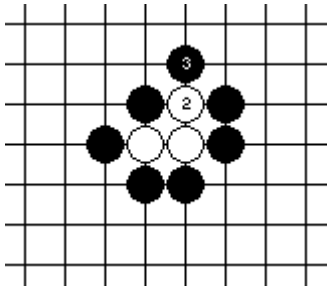

Diagram 7-4

Diagram 7-3 demonstrates another example. Five stones versus two stones – definitely more advantageous to black. So black plays at 1, ready to whack the two white stones off the board at A anytime. Yet the resistance put up by white in Diagram 7-4 is useless. White 2 tries to squeeze out through the narrow passageway, but black 3 blocks it before white succeeds, and makes a clean sweep of three white stones.

7.2 Double Atari

As the name implies, *double atari* occurs when you atari two groups silmultaneously, such that your opponent can't save both groups at the same time.

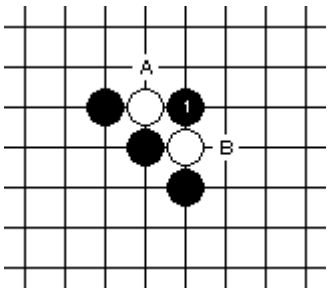

Diagram 7-5

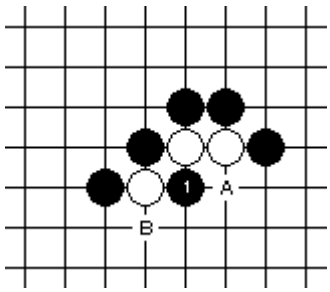

Diagram 7-6

Black 1 in both Diagram 7-5 and Diagram 7-6 are examples of double atari, threatening to capture white stones at A and B. But white can only choose one out of the two points, but not both. Hence black will get to play at the other point to capture the other stones.

7.3 Capturing A Stone On The First Line

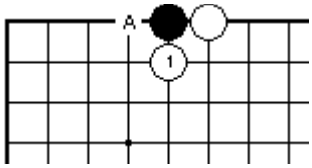

Diagram 7-7

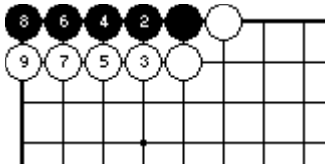

Diagram 7-8

We take a look at Diagram 7-7, and we see that the black stone is on the first line at the edge of the board. So white 1 ataris, forcing black to the edge. For white to atari at A is a mistake: black will gladly play at 1, making the two white stones scattered. It is no good for black to attempt the escape at 2 in Diagram 7-8, and white pursues with 3. White continue to press the black group to the edge, and finally, the great escape plan of black becomes its great sacrifice plan when the black group runs smack into the corner – and no way out. Actually, you don't need to play white 9, and do you know why?

7.4 Capturing A Stone On The Second Line

We show a black stone on the second line from the top, next to two white stones in Diagram 7-9. White first to capture the black stone. Answer: atari at white 1. Playing at A instead is a mistake. Black 2 in Diagram 7-10 is futile, as white 3 and 5 keeps black at the edge and black only loses more.

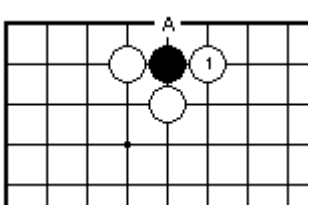

Diagram 7-9

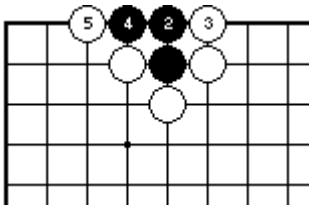

Diagram 7-10

7.5 Net

Chasing a thief too closely may just allow him to escape, while waiting for him at the exit might just nab him nicely. The *net* is also a very common capturing technique, but it just doesn't atari the target stones.

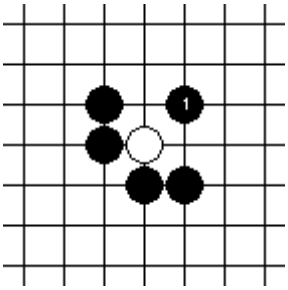

Diagram 7-11

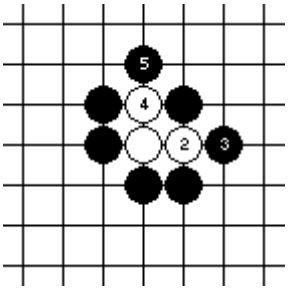

Diagram 7-12

The simplest of the net is shown in Diagram 7-11. Black 1 doesn't atari the white stone, but it catches the white stone nicely. White's struggle to break out of the net in Diagram 7-12 only allows black to have a larger capture. While white 2 and 4 pushes out of the net, black is already waiting to play at 3 and 5 and white has no exit route.

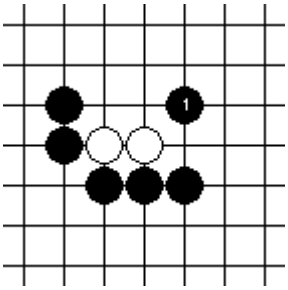

Diagram 7-13

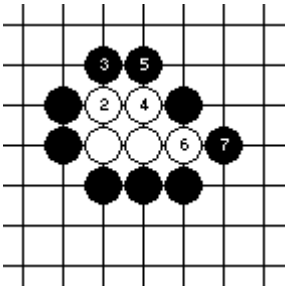

Diagram 7-14

Black 1 in Diagram 7-13 is also a net. The proof is shown in Diagram 7-14 – white simply couldn't save his two stones. Notice that while white 2, 4 and 6 tries to escape, black 3, 5 and 7 blocks white's exit. A caution on nets: not all moves that look like nets will capture the opponent's stones. Some so-called

nets are having holes that are simply too big and the fish inside simply swims away through these holes.

7.6 Ladder

This capturing technique is also very basic, but the *ladder* is slightly more complicated and needs more elaborate explanation. Ladders can be very powerful, sending your opponent's stones across the whole board and then capturing them at the other end of the board. However, the wrong use of ladders can wreck very heavy damage on your game. Both in the past and present, ladders that went astray have cost entire games, including those in professional tournaments. So use ladders very carefully, but once you have mastered ladders, you will find them very easy to use, and please feel free to use the ladder when the opportunity comes.

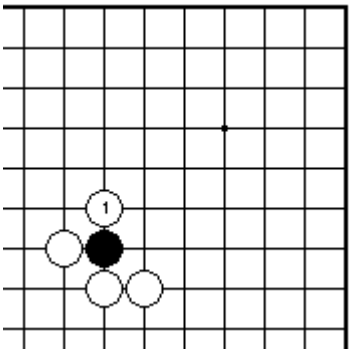

Diagram 7-15

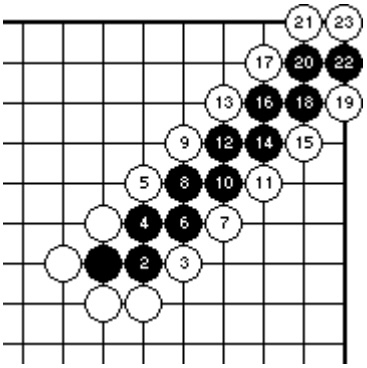

Diagram 7-16

Introducing you to the ladder – white 1 in Diagram 7-15. We all see that the area in the upper right corner is all empty – this is for simplicity sake. Diagram 7-16 shows when black tries to save his stone, but white keeps atari him on alternate sides, forcing black to go in a zigzag way, until white 23 captures all the black stones. It is worth noting that ladders imply *repeatedly atari the opponent's stones until they find no way to evade capture*.

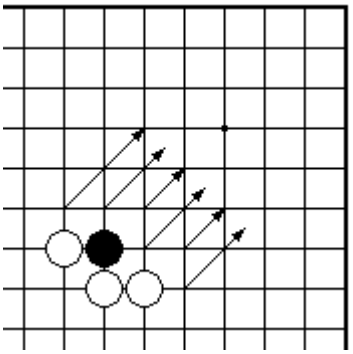

Diagram 7-17

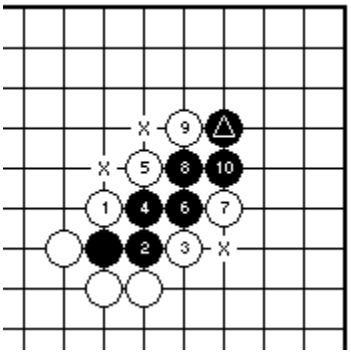

Diagram 7-18

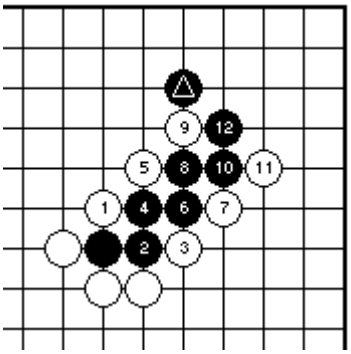

Diagram 7-19

So we see that the ladder in Diagram 7-15 runs diagonally to the upper right. Diagram 7-17 is a replica of Diagram 7-15, with six diagonal lines added. If there are black stones on any of these six diagonal lines, then the ladder will fail, so white would be in for a disaster if he tries to chase the black stone.

Diagram 7-18 has a black triangle stone added in the path of one of the diagonal line. White 1 onwards tries to capture black, but the ladder doesn't work. When black connects at 10, white could not continue chasing black and had to face the music. Black will have the pleasure of choosing which double atari (marked as X) on the white stones full of cutting points. Now suppose there is a black triangle stone in Diagram 7-19, and white embarks on a ladder. The sequence to black 12 shows the result: black 12 now ataris the white stone marked 9 instead, so the ladder fails. The triangle stone in Diagram 7-18 and Diagram 7-19 is known as a *ladder block*.

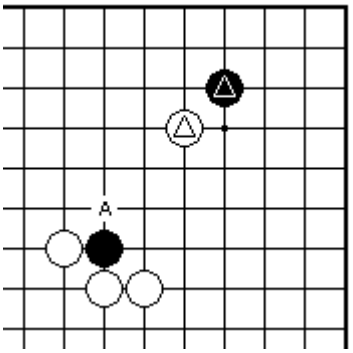

Diagram 7-20

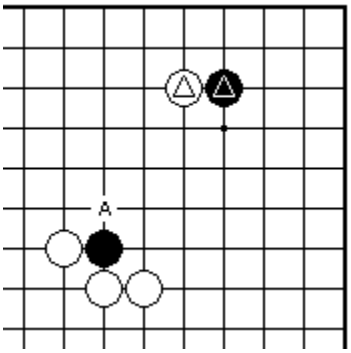

Diagram 7-21

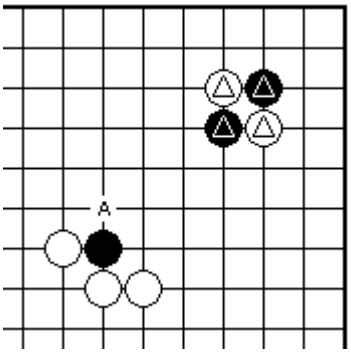

Diagram 7-22

If the stones in the pathway of the ladder consist of a mishmash of black and white stones, then please read out the ladder. There is no magic formula for such cases. Examples are Diagram 7-20, Diagram 7-21 and Diagram 7-22. Try finding out whether white playing at A can capture the black stone, and if you shift the triangle stones one line to the left, right, up or down, and you may find that the result changes. By the way, the ladders in Diagram 7-20 and Diagram 7-22 work, whereas the ladder in Diagram 7-21 does not.

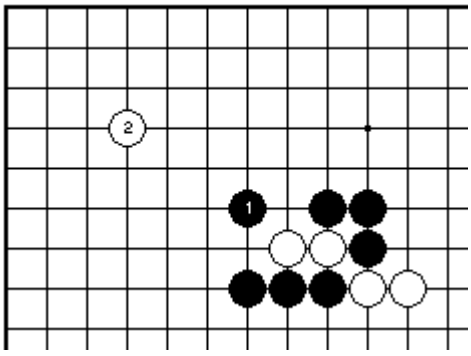

Diagram 7-23

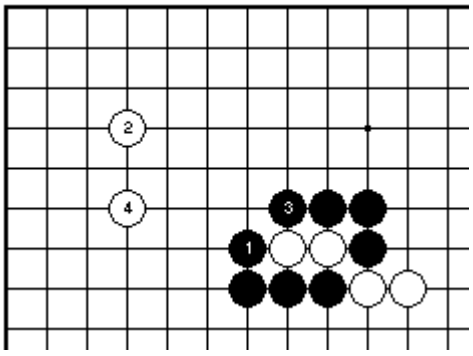

Diagram 7-24

If it is possible to use the net and the ladder to capture a group, always choose the net. Diagram 7-23 shows black 1 netting two stones, and if white 2 plays at the corner star point, black can ignore white and play elsewhere. Diagram 7-24 shows black 1 choosing a ladder. White 2 becomes a ladder block, and black must play at 3 to really capture the two stones. Now white can play at 4. Now we can see that choosing the ladder allows white to play two moves at the corner. This means that using the net is more efficient than the ladder, when both are possible.

7.7 Snapback

The *snapback* is a sacrificial strategy. Sacrifice one or more stones, and then take the opponent's stones off the board. Perhaps the snapback is the hardest to see among all these basic capturing techniques in this lesson.

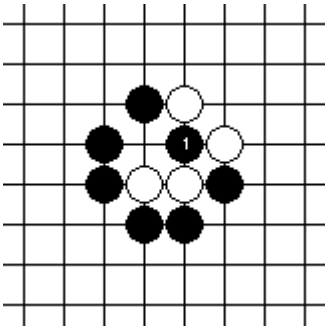

Diagram 7-25

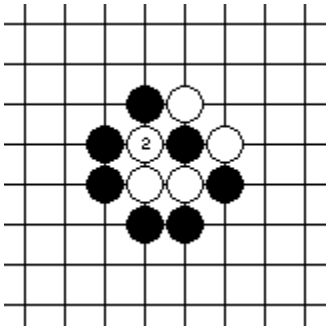

Diagram 7-26

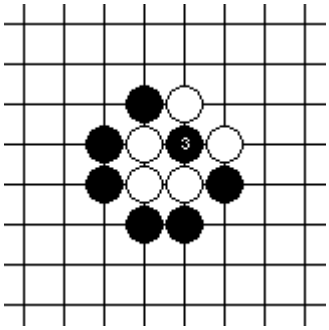

Diagram 7-27

Black 1 in Diagram 7-25 is a snapback. What if white 2 captures black 1 in Diagram 7-26? Black 3 in Diagram 7-27 will remove the three white stones off the board. Note that *stones caught in a snapback have only one liberty*.

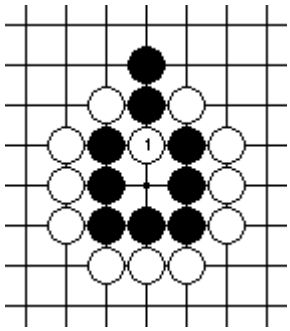

Diagram 7-28

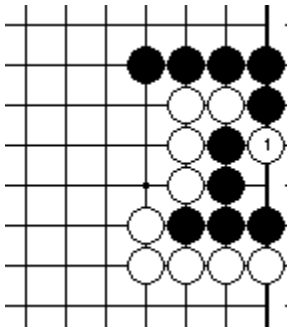

Diagram 7-29

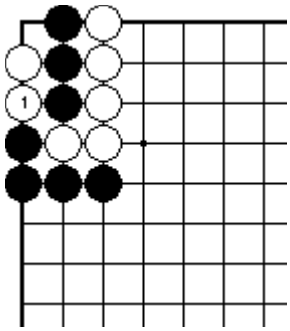

Diagram 7-30

White 1 in Diagram 7-28, Diagram 7-29 and Diagram 7-30 causes a snapback. For Diagram 7-30, if black takes the two white stones, white can play at 1 again. Surprised? Go and surprise those who do not know this!

[More Stuff] – Atari At Work

The atari is very, very common in Go, happening many times in almost any game. However, some people are just blind to ataris. The ability to see that whether a group is under atari actually is a sign of your strength in Go. Some beginners can't see ataris very well, losing the chance to capture opponent's stones or causing many of his stones to be taken off the board. Failure to see ataris is a very gross error – very often it costs entire games. To get stronger one must learn to see where and when the atari occurs.

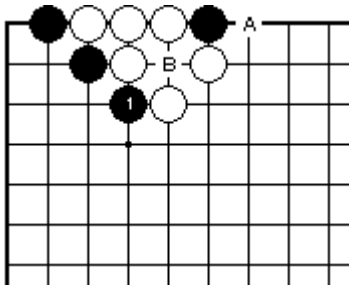

Diagram 7-31

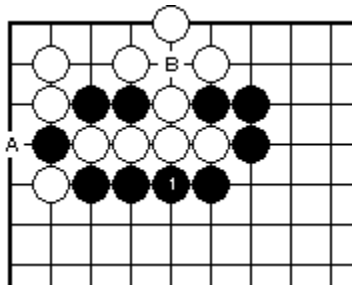

Diagram 7-32

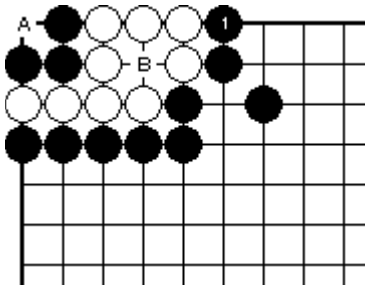

Diagram 7-33

Can you see what black 1 is trying to do in Diagram 7-31, Diagram 7-32 and Diagram 7-33? How should white play? In all of the cases, black 1 ataris the white stones – aiming to do a capture at B. White should answer by playing at A. Imagine how many stones are lost when one fails to see the atari? Woe betide those who fails to see ataris, no wonder such people keep losing Go games, and then complain that Go is not the game for them.

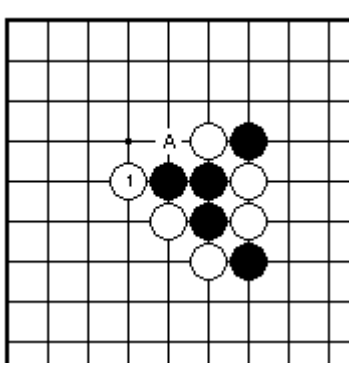

Diagram 7-34

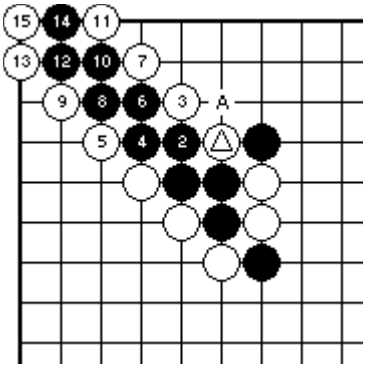

Diagram 7-35

Let us end off this topic by using a so-called ladder as an example. In Diagram 7-34, white plays at 1 and both players agree that the ladder works, so black should allow white to play at A to capture the three black stones. They give the sequence in Diagram 7-35 as the proof: until white 15, black is dead. Ridiculous! After black 2, the triangle white stone is under atari, and anywhere in the sequence after black 2, black can remove the triangle stone off the board. Hence, the ladder doesn't work after all.

How To Play Go

Lesson 8: Basic Connecting Techniques

8.1 Connecting Solidly

Recall in Lesson 4 on Connecting And Cutting, it is emphasized that it is generally a good idea to *keep your stones connected*. Of course, if the situation warrants it, you may consider to sever the connection of your opponent's groups so that the battle is advantageous to you.

This lesson will introduce the various basic techniques of connecting. We shall start off with the most fundamental form, which is *connecting solidly*.

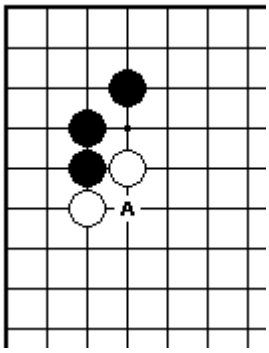

Diagram 8-1

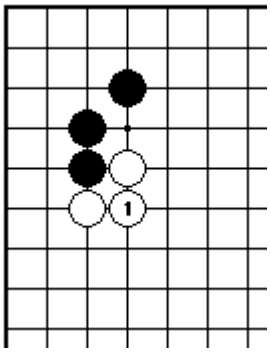

Diagram 8-2

In Diagram 8-1, white has a cutting point at A. If black gets to cut at A, then white is split into two and black will have the pleasure of attacking the two lone white stones. So in Diagram 8-2, white connects solidly with 1. With this there is absolutely no way black can cut the white group. Connecting solidly is sometimes the only way; while in many of the instances, it is the best way.

8.2 Tiger's Mouth

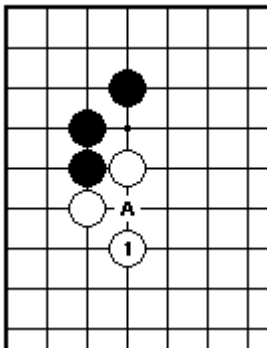

Diagram 8-3

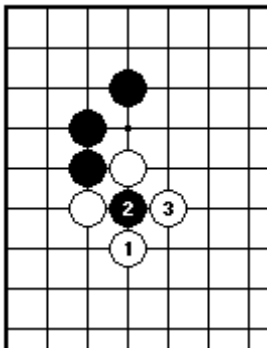

Diagram 8-4

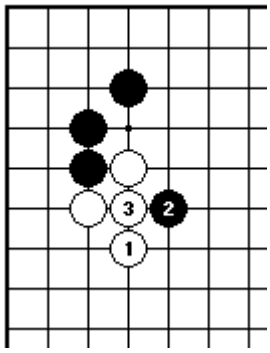

Diagram 8-5

A *tiger's mouth* is shown in Diagram 8-3, where white 1 defends the cutting point A. If black tries to cut at 2 in Diagram 8-4, black will be happy to take black 2 off the board with 3. This is the hallmark of the tiger's mouth. In Diagram 8-5, when black 2 makes a *peep* (threatening to cut into the tiger's mouth), it is not too late for white to connect at 3.

Usually, the tiger's mouth is more efficient than connecting solidly, but it may leave weaknesses, and it allows the opponent to use the peeping move to his advantage, e.g. as a ladder block.

8.3 Diagonal

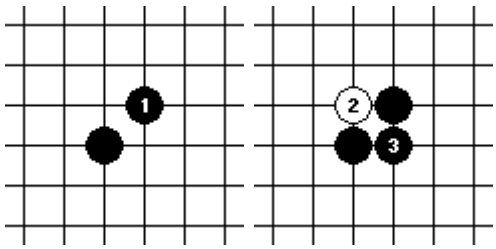

Diagram 8-6 **Diagram 8-7**

The *diagonal* (black 1 in Diagram 8-6) is very commonly used and can be very powerful. When white plays at 2 in Diagram 8-7, black can connect solidly at 3. If white makes a move at 3 instead of 2, then black connects at 2.

8.4 Bamboo Joint

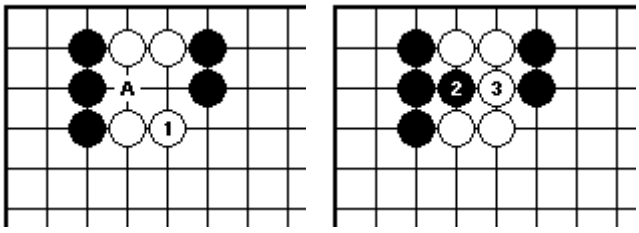

Diagram 8-8 **Diagram 8-9**

Where the situation permits, try to use the *bamboo joint* instead of connecting solidly. White 1 in Diagram 8-8 is just a bamboo joint. It gives greater influence on the exterior compared to connecting solidly at A, although both will do the job of saving the two white stones from black cutting at A. To prove that the bamboo joint is effective, when black 2 pushes in Diagram 8-9, white answers by connecting at 3. Even if black plays at 3, white can still connect at 2.

8.5 Bridge Under

The *bridge under* technique is found in many games and has many applications. Basically, it connects two groups on the opposite ends by the edge, using the properties of the edge.

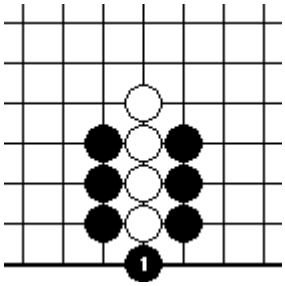

Diagram 8-10

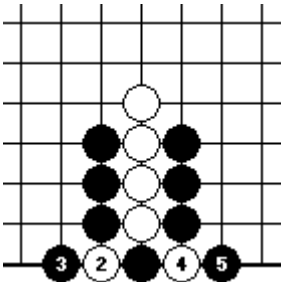

Diagram 8-11

Black 1 in Diagram 8-10 is the bridge under. To those who have never seen this before, it may be quite surprising, but it is perfectly safe. We prove this easily in Diagram 8-11. White playing at 2 and 4 will only find their stones taken off the board with black 3 and 5.

8.6 Jump

Some beginners like to play stones all connected in a straight line, one after another, but usually this would be too slow, or inefficient. Hence, stronger players will naturally prefer the *jump*, which is more efficient. However, the connection is rather loose, as you can see later.

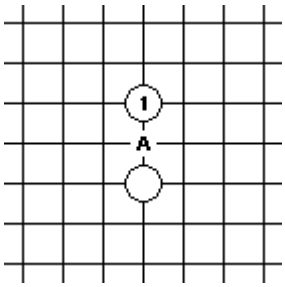

Diagram 8-12

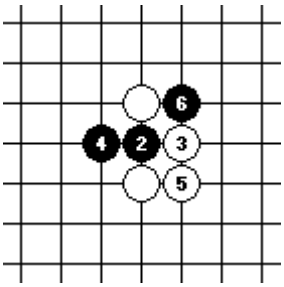

Diagram 8-13

In Diagram 8-12, white 1 is a typical jump. It is generally better than simply extending at A. However, it leaves the weakness of the *wedge* by black at A, hence the connection is not as complete. Yet there is no worry to the wedge. Diagram 8-13 shows the sequence for the wedge at 2. White answers by the atari at 3, and then connects at one side at 5. When black 6 cuts, a battle will start, but it is four white stones vs. three black stones, and it is white's

turn. Thus in general, this battle is favourable for white. Still, white has to be on alert for the black's wedge.

8.7 Knight's Move

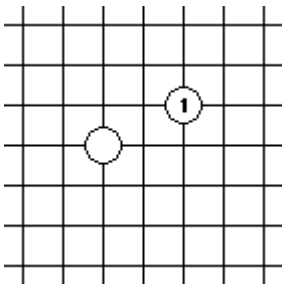

Diagram 8-14

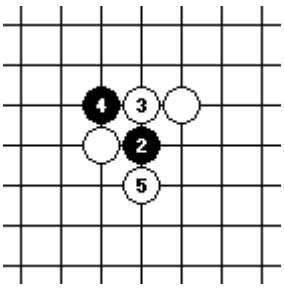

Diagram 8-15

White 1 in Diagram 8-14 is known as a *knight's move*. You might have guessed correctly that this name originated from the International Chess. If black decides to play at 2 in Diagram 8-15 and then make a *crosscut* at 4, white can catch black in a ladder with 5 (provided the ladder works). However, the connection by a knight's move isn't as strong as a jump.

8.8 Large Knight's Move

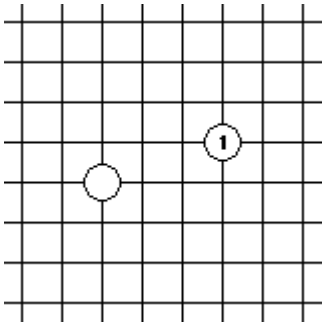

Diagram 8-16

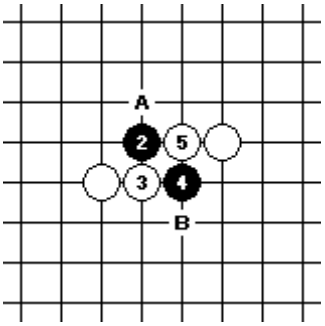

Diagram 8-17

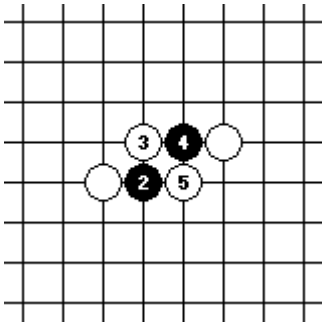

Diagram 8-18

The *large knight's move* is similar to the knight's move, except that it is played one line further, as in white 1 of Diagram 8-16. It is also a method of connecting, but the connection is even weaker than the knight's move.

However, for black to cut white's large knight's move isn't a simple matter. This section will list only two examples. Diagram 8-17 shows black 2 and 4 attempting to sever the connection, but is cut by white 5 instead. Black now faces two ladders at A and B, which he can't defend both at once. For black to try to attach at 2 in Diagram 8-18 followed by a wedge at 4 will only incur a loss when white performs a double atari on black.

There are other variations, but like the techniques described previously, these will turn out to be a battle which white can fight with confidence. So black should wait for his surrounding stones to increase before he engages in a cutting war with white.

[More Stuff] – Learning Go

Go is a very fun board game to learn, and here are some tips for beginners to get stronger in Go. And playing Go is a social activity as well, making friends while having an enjoyable time playing Go.

Go is not a game of rote memorization. Doing so will only impede your progress. Therefore you can't say that you have finished reading Go books or all the lessons in the How To Play Go series and you know everything about Go inside-out, or that you are an expert Go player. What we are trying to put across is that you couldn't just memorize, you need to *understand* and know how to *apply*. A mere reproduction of the techniques won't do.

As Go is a game full of variations, it is not possible for any text to cover every single variation. Together with the above point of understanding and application, this is why it is important to *practice*, by playing with other people. In this way, you will get to apply all the theory you learned so far, and it would reinforce your understanding of the various techniques in Go. Play with as many different people as possible, to gain exposure to the different styles of playing, and increase your experience. Put in *effort* to play every single game you play. It is good to *replay* the moves of the games after playing to find out which moves are good and which needs improvement. This is where game records will come in handy, as most people wouldn't be able to remember a game from head to tail.

Forming a *peer learning group* with those with similar strength in Go, and playing with stronger players are good ideas. You might also want to go to *Go clubs and associations*, as the atmosphere for playing Go would be ideal, and these are centralized places of playing Go. Some of them conduct *Go classes*, and perhaps you would like to enroll in one of these as well if you have the time (and money). With professional teachers in some cases, you will find yourself progressing quickly from these classes. It is also possible to play Go on the Internet, e.g. Internet Go Server (http://igs.joyjoy.net/).

In Singapore, the ideal place to learn and play Go is the *Singapore Weiqi Association* (http://www.weiqi.org.sg/). This place is air-conditioned, well-equipped with Go sets, and the atmosphere is just right for playing Go. Classes are also conducted for various levels as well.

How To Play Go

Lesson 9: Basic Endgame Techniques

9.1 Ending A Game

The *endgame* refers to the part of the game whereby the game is about to be concluded. It is usually a rather tedious process, with both players trying to make their territories more defined, and this part of the game can actually determine which player is the winner. Both players will try to grab the bits and pieces of small territories, attempt to increase their own territory while decreasing their opponent's territory.

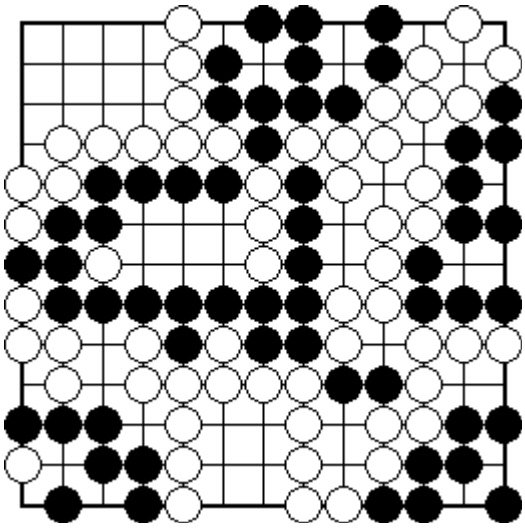

Diagram 9-1

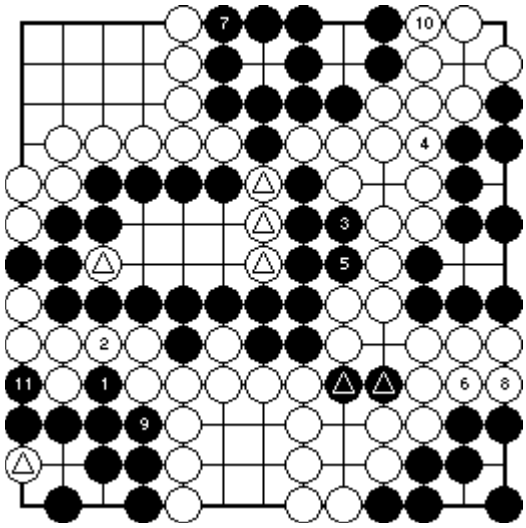

Diagram 9-2

We introduce this lesson with Diagram 9-1. It is a 13x13 board, and we see that both players' territories are already settled, and it is black's turn now. Diagram 9-2 shows the way for both players to end the game – black 1 to 11 each occupies a *neutral point*, which actually has no value but to aid calculation. After this both player passes, and the game ends. To start counting, we will remove all the dead stones, i.e. those stones marked with triangles.

Now we have come to Diagram 9-3. Remember that we are to compare both players' sums of territory and number of stones. Note that every single point on the board is either a stone or a player's territory (that's why we fill up neutral points), and hence the two sums add up to 13 x 13 = 169 points. We shall now count one player's sum – say white's (the selection is arbitrary). As the sum is the total of white's territory and number of white stones, we can add and remove white stones in white's area, and the sum will still be the same. That's because when we add a white stone, the number of white stones increase by one and white's territory decrease be one, and the total

will remain constant. So to make counting easier, we shall remove the white triangle stones and add white stones at points marked X, so that the territories would be in multiples of ten.

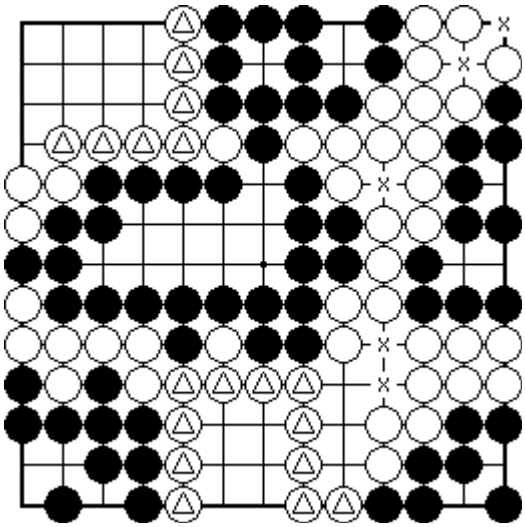

Diagram 9-3

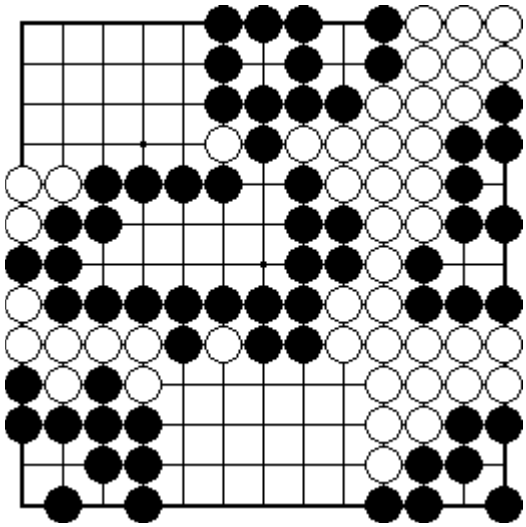

Diagram 9-4

Diagram 9-4 shows what happens after these alterations. So white has 20 points at the upper-left, and 20 points at the bottom, i.e. white has 40 points of territory. We will then count the number of remaining white stones on the board – arranging them into tens would be a good idea – and white has 45 stones. So white has a sum of 45 + 40 = 95 points. Hence black has a sum of 169 - 95 = 84 points. Hence white wins this game.

9.2 Order Of Endgame Moves

In general, we will play endgame moves that are worth more points first, i.e. if there are two places worth 5 points and 3 points respectively, we will grab the 5 point one first. However, what many Go players tend to forget that endgame moves can be classified into three types:

- Sente for both players.
- Sente for only one player.
- Gote for both players.

Sente is that after playing the move or sequence of moves, you still gain the initiative to play elsewhere. *Gote* is that after the playing the moves, your opponent need not answer you and can choose to play elsewhere, so he has the initiative. The three types above are in order of priority. Hence, endgame moves that are sente for both players has the biggest priority, and should be played first. Those that are gote for both players should be played last. That is, a move worth 4 points but sente for both players should be played before a move worth 10 points but gote for both players.

9.3 Value Of Endgame Moves

The preceding section is all theory – but how do we find out the value of endgame moves?

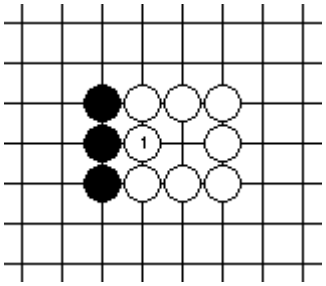

Diagram 9-5

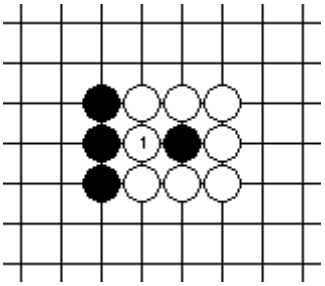

Diagram 9-6

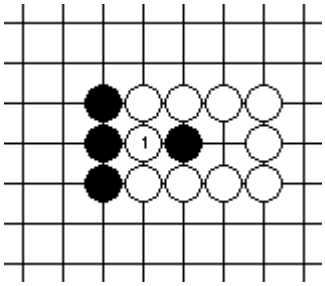

Diagram 9-7

We shall start off with the most basic one: the value of white 1 in Diagram 9-5 is 1 point as it surrounds 1 point of territory. In Diagram 9-6, white 1 makes the black stone a *prisoner* (stone removed from the board) and surrounds a point. Since the number of black stones decreases by 1, so the value of white 1 is 1 (for territory) + 1 (for black prisoner) = 2 points. The value of white 1 in Diagram 9-7 is 3 points – 2 for territories and 1 for a black dead stone.

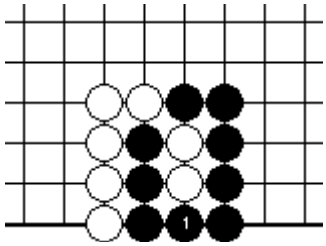

Diagram 9-8

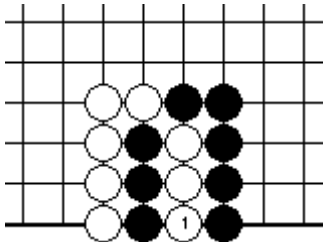

Diagram 9-9

In Diagram 9-8, do you think that black 1 is worth 4 points? No. Suppose white plays first instead at 1 in Diagram 9-9, white will get 6 points. So the difference between black and white playing first is actually 4 + 6 = 10 points, which is the correct value. That is, you need to take into account the loss/gain for both players when computing the value of a move.

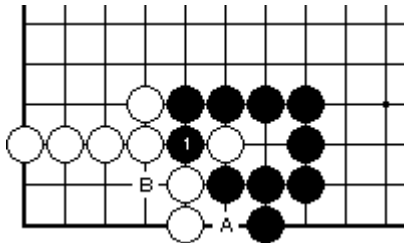

Diagram 9-10

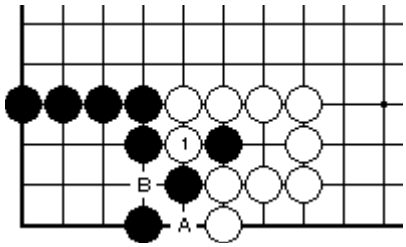

Diagram 9-11

We take a look at Diagram 9-10. Black 1 captures a white stone and gets 3 points in territory (including the dead black stone). However, black 1 also creates a cutting point such that when black plays at A, black threatens to capture the two white stones at B. Hence white will need to connect at B at some point of time, hence losing 1 point of territory. Therefore, the actual value of black 1 is 3 + 1 = 4 points.

In Diagram 9-11, white 1 obtains 3 points in territory, and this also creates the possibility for white to atari at A, forcing black to connect at B, leaving white in sente. However, if black plays at A, it is gote, so it is assumed that white will get to play the atari at A. Hence black's territory is assumed to be reduced by 1 point, and the value of white 1 is 3 + 1 = 4 points.

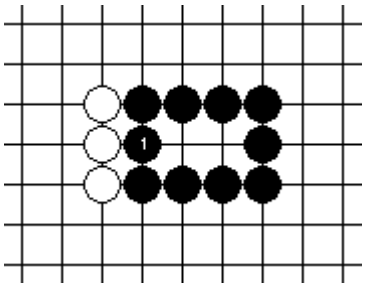

Diagram 9-12

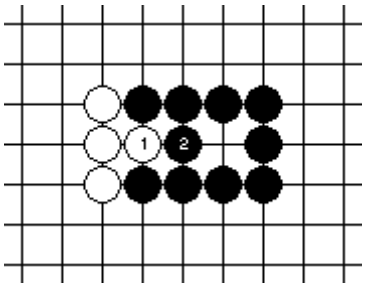

Diagram 9-13

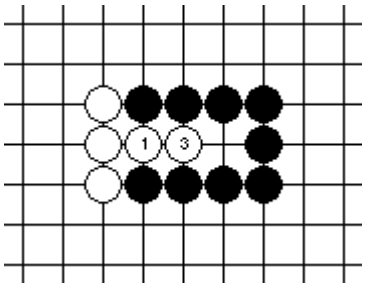

Diagram 9-14

What is the value of black 1 in Diagram 9-12? After black plays 1, he gets 2 points in territory. When white plays at 1 in Diagram 9-13, black still can play at 2 and get 1 point in territory, but black 2 is gote and black may want to play elsewhere instead. In Diagram 9-14, black 2 choose to play at other place, letting white 3 to reduce black's territory to nil, but white 3 is also gote which may be better off playing at another bigger place. Hence, the probability of black playing at 2 in Diagram 9-13 or white playing at 3 in Diagram 9-14 is ½. Hence we take the average and say that after white plays at 1 black has ½ point of territory. Compared to 2 points in Diagram 9-12, the value of black 1 in Diagram 9-12 or white 1 in Diagram 9-13 is 2 - ½ = 1½ points.

9.4 Hane At The Edge

The *hane* is a move played at a point diagonally next to another stone of the same player, and both stones are in contact of the same opponent's stone. The hane is usually an aggressive move commonly used to block the opponent's progress.

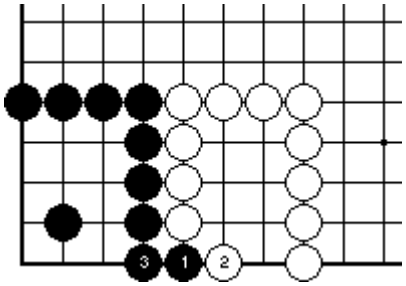

Diagram 9-15

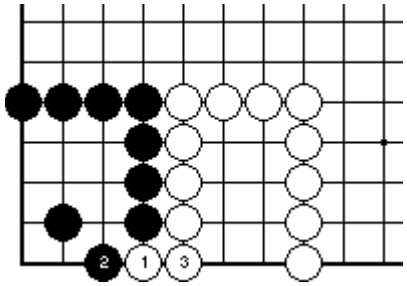

Diagram 9-16

Diagram 9-15 demonstrates a usual endgame technique. Black 1 hanes at the edge to reduce white's territory, and because of the property of the edge, it is suicidal if white is to respond by playing at 3. Hence white ataris at 2 to secure the remaining territory, and black 3 connects. Now black has 11 points, and white has 7 points. Diagram 9-16 shows what happens when white plays first instead: white 1 hanes and connects at 3. Black has 10 points, and white has 8 points. Notice that this place is gote for both players. If black plays first, black's territory is increased by 11 - 10 = 1 point. If white goes first, white gains 8 - 7 = 1 point. The value of this hane is 1 + 1 = 2 points.

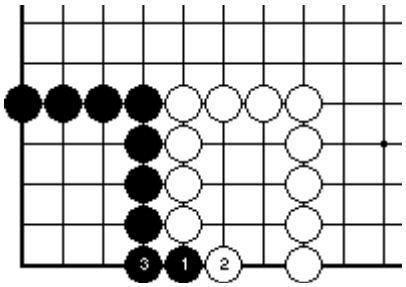

Diagram 9-17

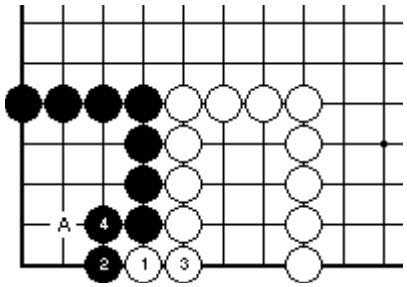

Diagram 9-18

The situation is a different when black hanes at 1, and connects at 3 in Diagram 9-17. If white plays first in Diagram 9-18, black will have to connect at 4 (can play at A instead) to prevent white from cutting at 4 and capturing black 2. Hence if black plays first, he gains 2 points; if white plays first, he gains 1 point. That is, the value is 3 points. This place is sente for white, but gote for black.

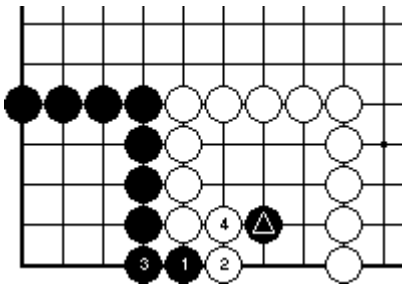

Diagram 9-19

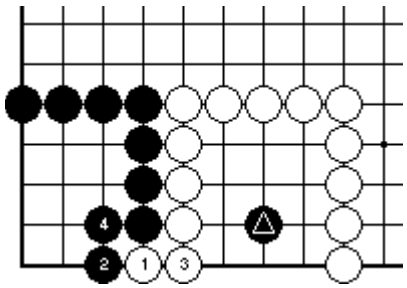

Diagram 9-20

When black plays first in Diagram 9-19, it is sente for black – white 4 needs to connect so that black will not cut at 4, capturing white 2 and saving the triangle stone. White first in Diagram 9-20 is also sente for white. If black plays first, he gains 2 points; if white plays first, he gains 2 points. So this place is worth 4 points. This place is sente for both players and should be grabbed early in the endgame.

So we notice that the hane at the edge can have varying values, depending on the configuration of the stones in the surrounding area.

[More Stuff] – Chinese Rule, Japanese Rule, Ing's Rule

There are three types of rules that are used commonly in this world: the Chinese rule, the Japanese rule and the Ing's rule.

The rule used in the How To Play Go lesson series is known as the Chinese rule. For the Japanese rule, the difference is in the way of counting. During the game, prisoners are not returned to the containers, but are kept separately. When counting, all dead stones and prisoners are filled in the territories of their respective territories, i.e. their territories are reduced respectively by the number of captured stones. When using the Japanese rules, *only the territories are compared, the number of stones is not compared*. Both rules used to have a komi of 5½ points for 19x19 boards, but now 6½ points or 7½ points is common.

The Ing's rule is devised by the late Ing Chang-Ki (a Taiwanese), after he made a study of the various Go rules. The Ing's defined komi as 8 points, and have a fast way of counting, but it is effectively the same as the Chinese rule. Before the game, there should be exactly 180 black and white stones each, and there are special containers available (made specially for the Ing's rules) that makes it easy for the players to ensure that they have the correct number of stones. At the end of the game, after dead stones have been removed, four white stones will be placed in black's territory as komi. The prisoners and dead stones would be returned to their respective containers. Next the two players will fill up their territories with the stones from their containers. The player who uses up all the stones from his container, leaving unfilled territory would be the winner; while the opponent will have filled up his territory totally, leaving stones in his container, would be the loser.

How To Play Go
Lesson 10: Capturing Races

10.1 Introduction

A *capturing race* occurs when black surrounds a white group, but is itself partially or wholly surrounded by white, and neither surrounded group is alive by itself. The idea of the capturing race is actually implicitly brought out in many of the earlier lessons, especially in section 2.4, titled “Seki”.

Generally, there are three possible outcomes from a capturing race:
- Black wins the capturing race (i.e. black captures the white group).
- White wins the capturing race.
- The result is a seki.

The capturing race is actually a “race” of liberties. Usually, the party with more liberties will win the capturing race.

10.2 How To Fight A Capturing Race

Now we shall study the simplest case. See Diagram 10-1, a capturing race between the marked stones where each party has four liberties each.

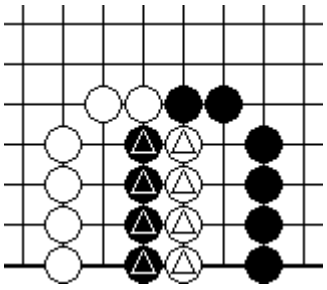

Diagram 10-1

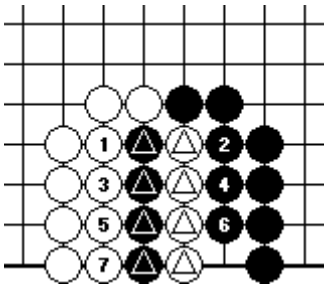

Diagram 10-2

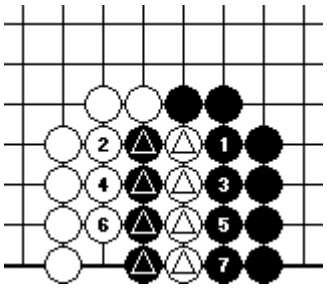

Diagram 10-3

Suppose white plays first. By reducing the liberties one by one in Diagram 10-2, white will capture black at 7. Diagram 10-3 shows what happens if black plays first. In this case, black fills up all the liberties before white and wins the capturing race.

Next, we consider the case when one party, say, black has more liberties. This is the case depicted in Diagram 10-4 (black has one extra liberty).

We can see that even if it is white’s turn, and he starts reducing the liberties of the five black stones in Diagram 10-5. However, black 4 already ataris the white group, and by the time white 5 reduces the black group to one liberty,

black 6 sends the four white stones off the board. From this we can deduce that even if white plays first in Diagram 10-4, black will still win the capturing race. In short, the white group is effectively dead and white can (and should) actually play elsewhere.

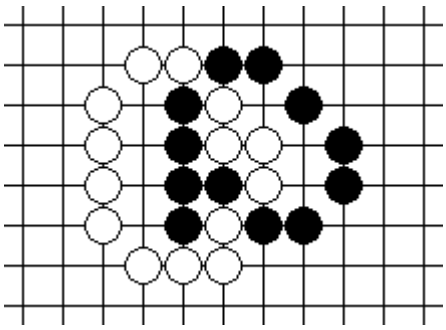

Diagram 10-4

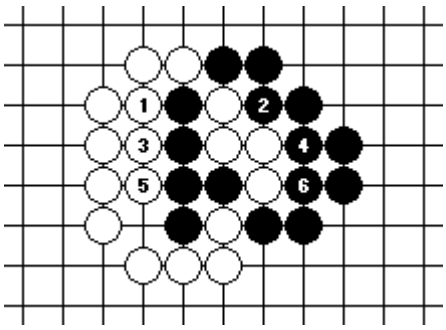

Diagram 10-5

In conclusion, if both players have the same number of liberties, the player who plays first wins the capturing race. If one player has more liberties than the other, then that player wins the capturing race.

10.3 Common Liberties

In capturing races, it is very often for both groups to have liberties in common. We call them *common liberties*, otherwise also known as *shared liberties*. Diagram 10-6 illustrates an example, where the common liberty is marked X. They have an equal number of *outer liberties*, three each. The question is: white first, how to win the capturing race?

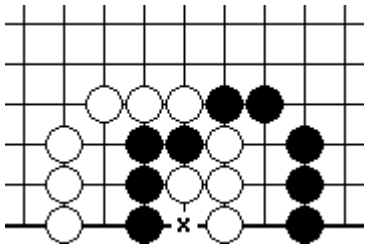

Diagram 10-6

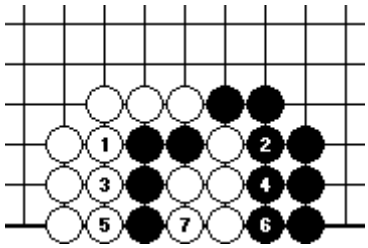

Diagram 10-7

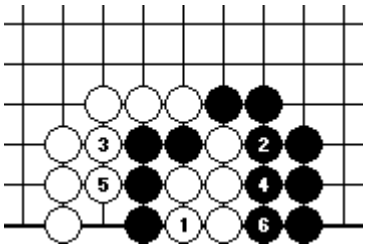

Diagram 10-8

The correct way of filling up liberties is shown in Diagram 10-7. White starts filling up liberties outside, and finally fills up the common liberty at 7, and wins the capturing race. If white 1 fills up the common liberty instead, Diagram 10-8 results. Now both groups have three liberties each, and it is black's turn, so black wins the capturing race.

The rule of thumb: *always fill up the outer liberties before filling up the common liberties*. For capturing races involving only one common liberty, the possible results are the same as those without any common liberties.

Next, we continue our investigation into capturing races involving two or more common liberties. Still remember what is the third possible outcome of a capturing race? Take a look at Diagram 10-9. Black and white have the same number of outside liberties, and two common liberties.

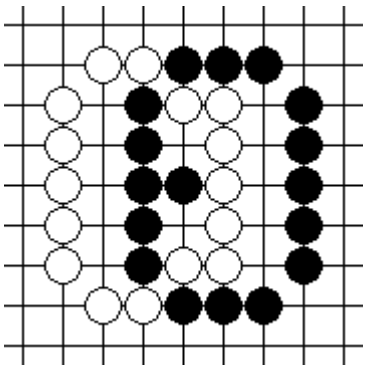

Diagram 10-9

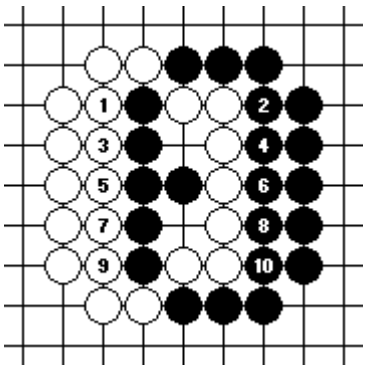

Diagram 10-10

We assume that white plays first, resulting in Diagram 10-10, which is a seki. The same result will occur if black plays first instead. Why? It is the common liberties that caused the seki.

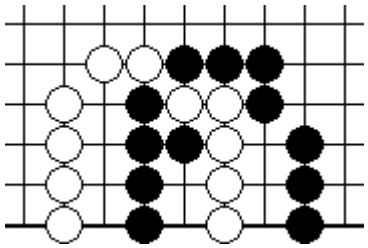

Diagram 10-11

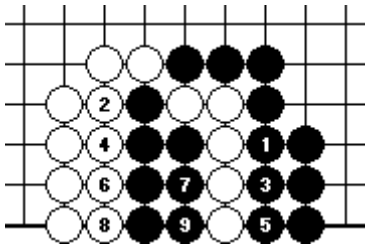

Diagram 10-12

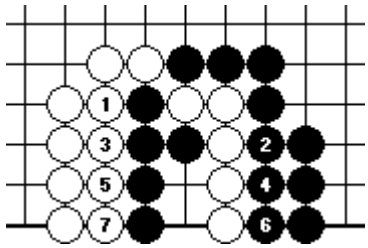

Diagram 10-13

Diagram 10-11 shows the case when there are two common liberties, but black has one more liberty than white. If black goes first, he wins the capturing race as shown in Diagram 10-12. Otherwise, a seki results in the sequence shown in Diagram 10-13.

Things get more complicated when the number of common liberties increases, but there is a pattern: *to ensure that one party wins the capturing race, the difference in the outer liberties of the two groups must be at least the number of common liberties*.

10.4 Eyes And Common Liberties

The pattern stated in the previous section is perfectly valid, with an exception. That is, the groups in question contain no eyes. Once we have groups containing eyes, we must change the way we count liberties.

We shall begin with Diagram 10-14, where both parties have three liberties each. It seems that the party that plays first will win the capturing race.

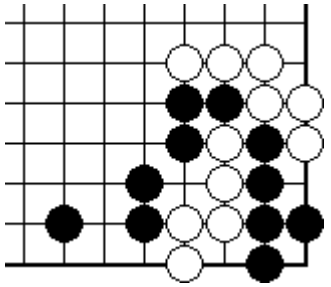

Diagram 10-14

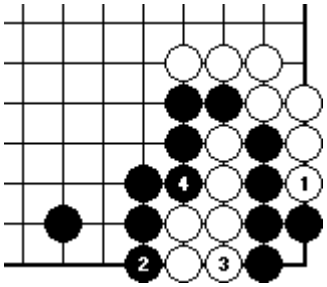

Diagram 10-15

Let's say that white has the initiative here and proceeds as shown in Diagram 10-15. White 1 fills up the outer liberty of the black group, and black 2 follows suit. Because of the presence of the eye, white must play at 3 (the common liberty) in order to reduce black's liberties, but in the process, reduce one of his own liberties. Thus, black 4 will capture the white group. Effectively, black has already won the capturing race in Diagram 10-14, despite having the same apparent number of liberties.

When one group has an eye and the other group doesn't, in the ensuing capturing race, the party without the eye must fill up the common liberties in the process of reducing the liberties of the opponent's group. *In this respect we can say that the common liberties are solely "owned" by the group with the eye.* Hence, in Diagram 10-14, black has three liberties (one outer liberty, one common liberty, and one liberty in the eye), but white has only two liberties (two outer liberties, and the common liberties don't count).

For the case where both groups in question have an eye each, it is preferable for you to do manual counting and not rely on results. Isn't there simply too many things to remember in life? Still, we will examine the number of liberties in a big eye next.

10.5 Counting Liberties In Big Eyes

Like in Lesson 6 titled "Big Eyes", we will want to make two assumptions about the big eyes we are discussing in this section:

- All the stones that make up the big eye must be *solidly connected in a chain*.
- The eye *must not be in the corner*.

To simplify things, we shall limit our liberty counting to that inside the big eye only, and ignore all exterior liberties that are outside the eye.

The process of counting liberties is much like the ritual we did in Lesson 6 when we proved why certain types of big eyes are considered dead, and we shall begin with the two-space eye in Diagram 10-16.

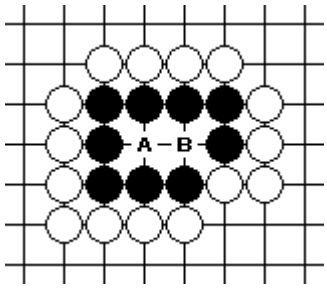

Diagram 10-16

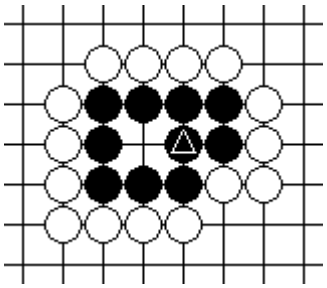

Diagram 10-17

It has *two liberties* at A and B, nothing really special. When white fills up the liberty at A, black should never play at B to remove the stone at A, resulting in Diagram 10-17, in which white can make an immediate capture of the black group. In analyzing the difference, we find that when black plays at B, this move is not used to reduce white's liberties during the capturing race, and instead it is used as a response as white A. Thus, the effect of black playing at B is to reduce its own liberties by one.

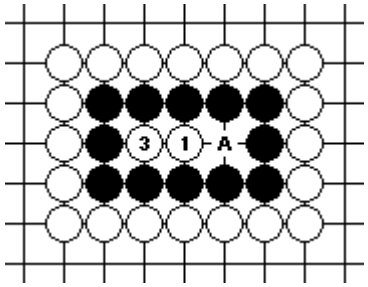

Diagram 10-18

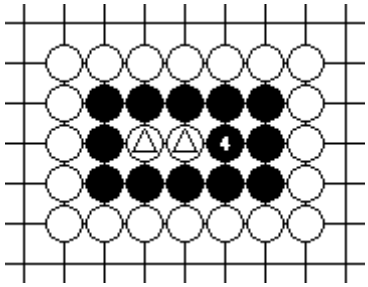

Diagram 10-19

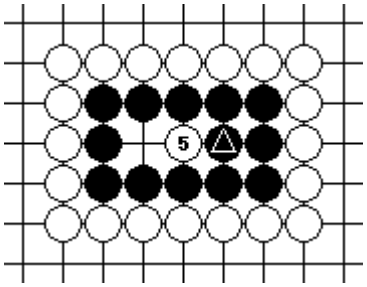

Diagram 10-20

We move on to the three-space big eye, as shown in Diagram 10-18. It doesn't matter whether the eye is a straight three or bent three, so long the eye occupies three spaces. White 1 and 3 reduces black's liberties and ataris the black group (black 2 is played elsewhere). If black allows white to make the capture at A, then we can say that white has taken three moves to capture black. However, if black plays at 4 and captures the marked stones as shown in Diagram 10-19, white will still atari the black group with 5 as shown in Diagram 10-20, with the same net result. Hence, we conclude that a three-space big eye has *three liberties*.

A four-space big eye has *five liberties*. What, not four? We shall show the sequence in filling up liberties in Diagram 10-21. White 5 makes an atari, black 6 makes a response, and white plays at 7 in Diagram 10-22. Black is now left with two liberties (a three-space eye with one liberty filled up). Next we count the number of moves white have made. We count moves 1, 3 and 7 (note that white 5 forces a response at black 6, so we don't count this

move), a total of three moves, and thus a reduction of three liberties. Add them up and we have five liberties for a four-space eye.

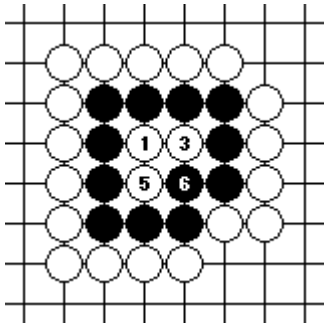

Diagram 10-21

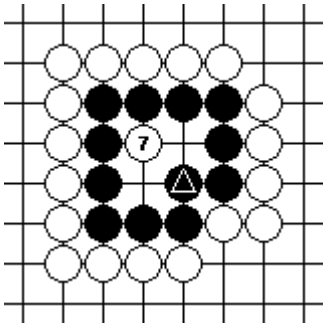

Diagram 10-22

In a similar fashion, we can argue that a five-space big eye has *eight liberties*. In Diagram 10-23 and Diagram 10-24, we see that white 7 forces black 8 to remove four stones from the board. White has reduced four black liberties of black by playing at 1, 3, 5 and 9, and now black has four liberties left (a four-space eye with one less liberty). Summing them up we have a total of eight liberties.

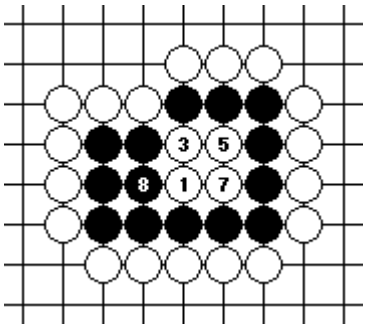

Diagram 10-23

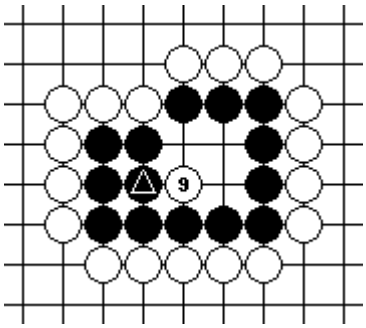

Diagram 10-24

A six-space big eye has *twelve liberties* inside the eye. Diagram 10-25 and Diagram 10-26 shows white 1, 3, 5, 7 and 11 reducing five liberties, with seven liberties remaining.

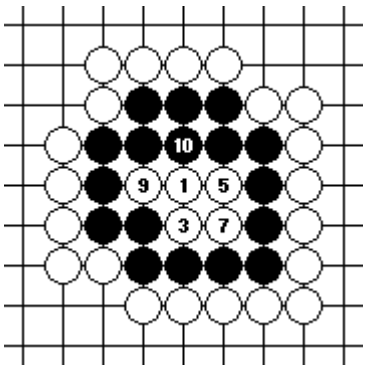

Diagram 10-25

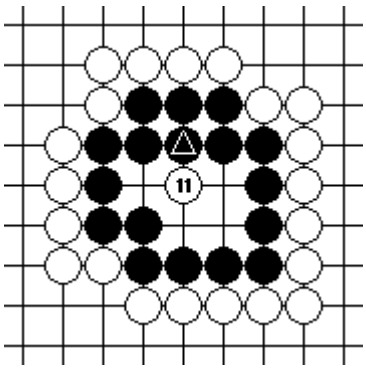

Diagram 10-26

As noted in the beginning of the section, we made two assumptions in deriving the number of liberties in a big eye. If any of the assumptions are not met, it is very likely that the actual number of liberties will be much less than the derived numbers. Detailed discussion is outside the scope of this lesson, but two examples will be shown below.

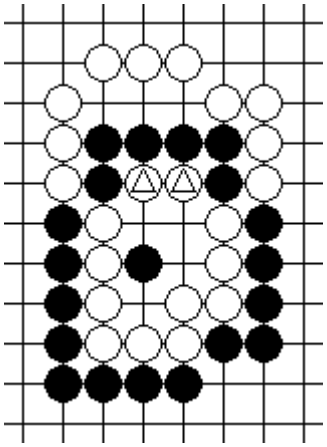

Diagram 10-27

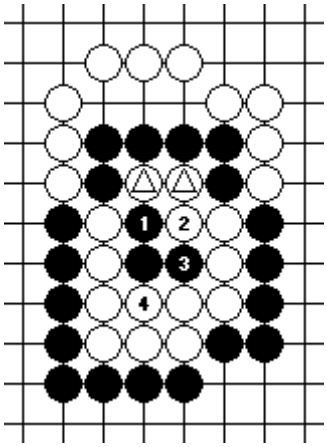

Diagram 10-28

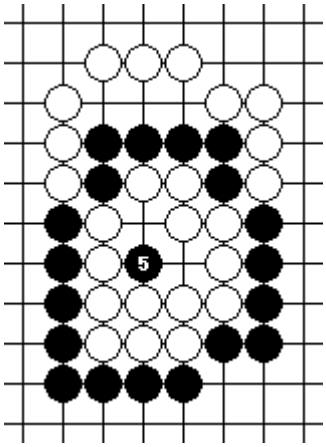

Diagram 10-29

We make a study of Diagram 10-27, which violates the assumption of having all the stones in a chain. With the two marked stones not solidly connected to the rest of the bulky five, white definitely does not have seven liberties. Assuming black first, following the sequence as shown in Diagram 10-28 and Diagram 10-29, black 1 ataris the marked stones, forcing white to connect at 2, and making another atari at 3, forcing the response at 4, and black makes the placement at 5. White is now left with only two liberties.

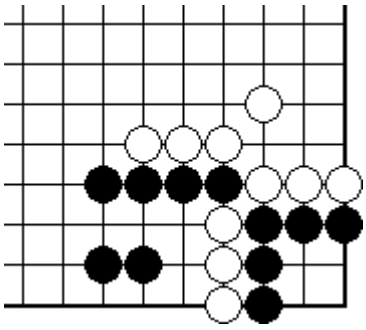

Diagram 10-30

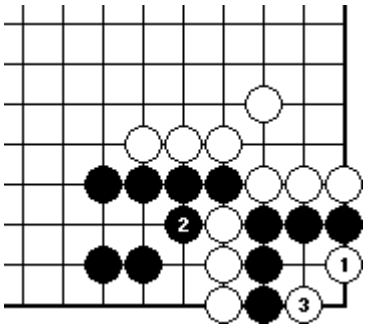

Diagram 10-31

Next we show an example of a big eye at the corner. Diagram 10-30 shows a bulky four, but it has only three liberties, not five. If white plays at 1 and 3 in Diagram 10-31, black can do nothing to increase his liberties.

10.6 Shortage Of Liberties

Shortage of liberties is a term used to describe the case that one party finds that a necessary move he needs to make will put himself under atari.

We have already encountered one such case back in section 10.4. We take a good look at Diagram 10-15, and we realize that white can't play at 3 to fill up black's liberty as white will put himself under atari. We can say that white is caught with a shortage of liberties.

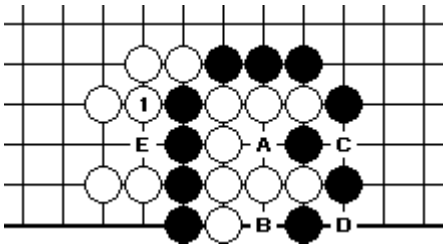

Diagram 10-32

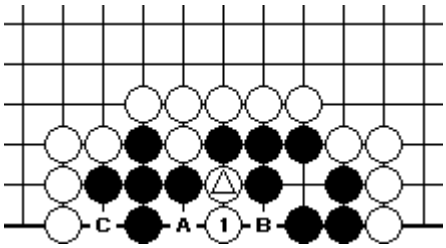

Diagram 10-33

In Diagram 10-32, when white plays at 1, black suddenly realizes that he can't fill up white's liberties at either A or B, being caught with a shortage of liberties. By the time black plays at C (or D), white is one step ahead and plays at E, winning the capturing race.

In Diagram 10-33, white 1 descends to the edge, and black suddenly finds that he is unable to play at either A or B to capture the two white stones. With a shortage of liberties, black can only witness the death of the group (white can play at C to capture the five stones). This is a famous case known as *double shortage of liberties*.

[More Stuff] – Go Playing Programs

There are many programs out there that allow a human Go player to play against the computer. For the beginner, many of these are great learning tools. The Singapore Weiqi Association's website (http://www.weiqi.org.sg/) contain a good number of links to software vendors that produce quality Go playing applications, many of which are freely downloadable. Some of the others are shareware, and there are also those that require you to pay upfront.

Due to the complexities inherent in the Go game itself, the best Go playing applications are only ranked in the amateur Kyus, given the current computing power available. This is quite unlike Chinese Chess and International Chess, where professional level applications have been written. It still remains a challenge to develop a Go playing application that can beat a professional 1 Dan player. We shall wait and see when this happens.