# 1 Introduction

## 1.1 General

We compare values to distinguish local gote from sente objectively, and analyse long sequences carefully to distinguish 'worth playing successively' from 'not worth playing successively'. Thereby, even when this is difficult, we evaluate local endgames correctly so that we start or interrupt local play at the right moments.

The impact of correct local endgame evaluation taught by this book is like the impact of correct local tactical reading determining life status. Both are essential. As a consequence of our local analysis, we improve our global positional judgement, strategy and move order. By gaining extra points, we increase our winning chances.

There are two approaches to identifying types of local endgames and moments of interrupting local play: rough, naive, subconscious guesswork versus accurate, careful, value-driven analysis. About every third decision relying on guesswork involves mistakes. Each such mistake loses some amount from circa half a point to five points (see the following section for examples). Since we have to make very many decisions during the endgame, even a small average loss per mistake amounts to a large total loss. Therefore, we evaluate seriously.

How relevant are the topics in this book? The endgame is often taught as evaluation, reading and tesujis. First of all, we must evaluate to avoid large mistakes and develop a basic understanding of global move order (see *Volumes 1 + 2*). Next, we refine our skills by finer local evaluation (in this book), reading and tesujis (see the literature), and finer global evaluation (see a later volume). These aspects are equally important. Eventually, we might also study the finest evaluation (see *Mathematical Go Endgames* for infinitesimals). Hence, the topics in this book are as relevant for good endgame play as reading and tesujis.

Despite its great relevance, finer endgame evaluation by value-driven analysis has been neglected in teaching and the literature since its theory was mostly missing. Bill Spight, I and a few other experts have invested great effort in research and created the theory. We suggest replacing guesswork by proper evaluation, because we must avoid the mistakes of playing in a wrong local endgame or continuing local play for too long. Despite the novelty of the theory, it has already been worked out carefully, relies on mathematical research, and often represents absolute truths. Theorems and proofs appear in a later volume. We strongly encourage everybody to improve their game by using the theory.

For many examples in this and the following books, I have found the theory to be very well applicable. If an example has many variations, time and effort are required for tactical reading and value calculations, neither of which we should neglect. These are the two greatest weaknesses of amateur players. As we know that our weaknesses block our improvement, let us overcome guesswork and welcome evaluation.

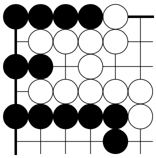
Usually, evaluation requires iterative calculation and comparison of values, although faster methods are sometimes possible. Knowing what values to calculate and how is part of our skill.

We accelerate endgame evaluation like we accelerate tactical reading: we ignore obviously inferior variations, analyse locally, or apply approved methods of simplification. Nevertheless, a complex local position can still have quite a few relevant variations. For tactical reading, we must not overlook any essential variation. For endgame evaluation, we must not ignore any essential value. However, the question arises whether we can only keep the values of the initial local endgame, discard the values of all follow-up positions and recalculate those of a new initial local endgame when it arises. We always need at least some early follow-up values. The more other values we recall the better our evaluation and planning become. We focus on the main variations, which occur due to successive alternating play. Once we have calculated values of their follow-up positions ('followers') and moves, we may forget any helping values of branches whose actual play is unlikely.

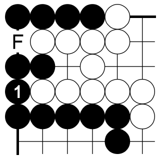
## 1.2 Motivation

With the theory in this book, we avoid mistakes in simple examples (such as those below) and difficult examples (see later books). A local endgame position has a 'count', which predicts its score, and a 'move value', which is the value of a move played in it. Counts and move values can differ depending on whether they are gote or sente values. To determine the correct values of a local endgame, we must know whether it is a 'local gote' or 'local sente', in which one player has a sente sequence. We study typical sizes of mistakes when confusing local gote and sente *(Examples 1 + 2),* or evaluating long sequences wrongly

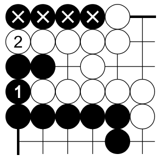
*(Example 4).* Each such mistake loses circa half a point to five points. *Answer 2* in *6.6 Problems* (p. 212), which studies the position created in *Dia. 4.2,* demonstrates the possibility of a five points mistake, which is less frequent. We recall *Volume 2* or preview *2 Basics* (p. 15) to understand the used calculations of gote or sente counts, and gote or sente move values.



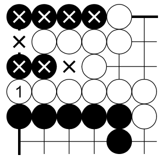
*Example 1: local endgame*




*Dia. 1.1: follow-up, B = -4*




*Dia. 1.2: sente sequence, S = -8*




*Dia. 1.3: White starts, W = -14*

*Example 1:* After Black 1 in *Dia. 1.1,* the follow-up F is a simple gote with the easily calculated count B = -4. The sente sequence in *Dia. 1.2* results in the count S = -8. White's start in *Dia. 1.3* results in the count W = -14. If we guess whether the initial local endgame in *Example 1* is a local gote or local sente, how much can we err when assessing the values of the local endgame?

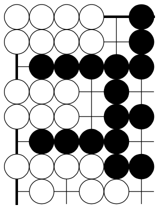
Assume we guess that the local endgame is a local gote. Its gote count must be the average of the counts B and W of its gote followers: $C_{GOTE} = (B + W) / 2 = (-4 + (-14)) / 2 = -18/2 = -9$. Its gote move value must be the difference value divided by the tally 2, that is, $M_{GOTE} = (B - W) / 2 = (-4 - (-14)) / 2 = 10/2 = 5$.

Assume we guess that the local endgame is a local sente. Its sente count must be the inherited count of the sente follower: $C_{SENTE} = S = -8$. Its sente move value must be the difference value of the counts S of the black sente follower and W of the white reverse sente follower: $M_{SENTE} = S - W = -8 - (-14) = 6$.

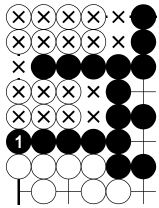
We estimate the count as either $C_{GOTE} = -9$ or $C_{SENTE} = -8$ so the error in our local positional judgement can be 1 point. We estimate the move value as either $M_{GOTE} = 5$ or $M_{SENTE} = 6$ so the size of this error can also be 1 point. We will learn to identify correctly the initial local endgame as a local gote.

*Example 2:* Black's start in *Dia. 2.1* results in the count B = 33. After White 1 in *Dia. 2.2,* the follow-up F is a simple gote with the easily calculated count W = 9. The sente sequence in *Dia. 2.3* results in the count S = 18. Suppose we guess the type of the initial local endgame in *Example 2.*

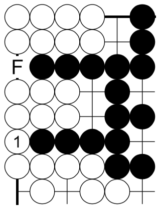
If we guess that the local endgame is a local gote, its gote count is the average of the counts B and W of its gote followers, $C_{GOTE} = (B + W) / 2 = (33 + 9) / 2 = 42/2 = 21$, and its gote move value is the difference value divided by the tally 2, that is, $M_{GOTE} = (B - W) / 2 = (33 - 9) / 2 = 24/2 = 12$. If we guess that the local endgame is a local sente, its sente count is the inherited count of the sente follower, $C_{SENTE} = S = 18$, and its sente move value is the difference value of the counts B of the black reverse sente follower and S of the white sente follower, $M_{SENTE}$ = B - S = 33 - 18 = 15.



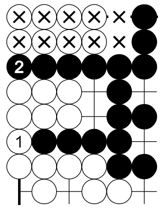
*Example 2: local endgame*



*Dia. 2.1: Black starts, B = 33*



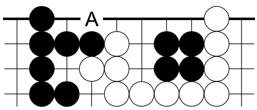
*Dia. 2.2: follow-up, W = 9*



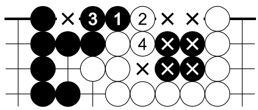
*Dia. 2.3: sente sequence, S = 18*

We estimate the count as either $C_{GOTE}$ = 21 or $C_{SENTE}$ = 18 so the error in our local positional judgement can be 3 points. We estimate the move value as either $M_{GOTE}$ = 12 or $M_{SENTE}$ = 15 so our error can be 3 points. By all means, we must avoid mistakes losing 3 points with one move.

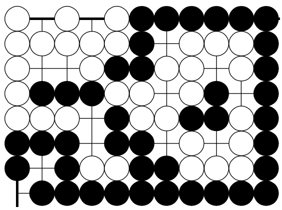
Although we have not studied more difficult local endgames with iterative follow-ups yet, it is easy to make mistakes of guessing the wrong type even for local endgames with short sequences. In *Example 2,* the visual appearance of more stones connected by the follow-up play can easily suggest local sente as the type of the initial local endgame. This is wrong. It is a local gote. We have to avoid guesswork and must learn to distinguish local gote from local sente by value conditions.



*Example 3: local endgame*



*Dia. 3.1: long sequence*



*Example 4: local endgame*

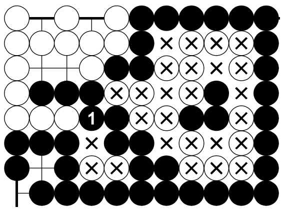
*Example 3:* Black's long sente sequence in *Dia. 3.1* results in the count B = -10. White's start at A results in the count W = -13. *Example 7* in *6.4 Examples* (p. 168) explains why the values of the initial local endgame are derived from these counts. The sente count is C = B = -10 and the sente move value is M = B - W = -10 - (-13) = 3.

*Example 4:* This example demonstrates that mistakes can also occur due to wrong evaluation of long sequences. As a consequence, we start or interrupt local play too early or late. In *6.6 Problems* (p. 212), we analyse the local endgame carefully, explain the correct evaluation and calculate the count $W_1$ = 5 of the position after White 1 in *Dia. 4.2,* in which the remaining local endgame Z has the count 2. The values of the initial local endgame depend on the count B =

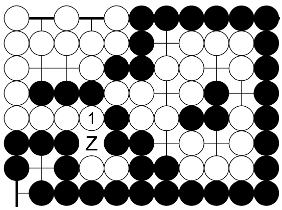
45 of the black follower created in *Dia. 4.1* and some count of a white follower after play 1, 2, 3, 4 or 5 of White's alternating sequence in *Dia. 4.3*.

In particular, we might make the mistake of using the count $W_5 = 10$ after play 5 of White's alternating sequence. We would calculate the initial local endgame's gote count $C_{GOTE} = (B + W_5) / 2 = (45 + 10) / 2 = 55/2 = 27\ 1/2$ and gote move value $M_{GOTE} = (B - W_5) / 2 = (45 - 10) / 2 = 35/2 = 17\ 1/2$. The error of these values is 2 1/2 points.

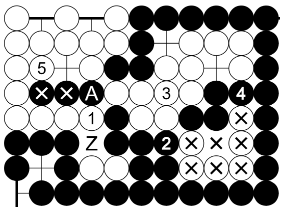
Evaluated correctly, the initial local endgame is a simple gote with follow-ups. Its values depend on the count $W_1 = 5$ after play 1 of White's alternating sequence. The local endgame in *Example 4* has the gote count $C_{GOTE} = (B + W_1) / 2 = (45 + 5) / 2 = 50/2 = 25$ and gote move value $M_{GOTE} = (B - W_1) / 2 = (45 - 5) / 2 = 40/2 = 20$.




*Dia. 4.1: Black starts, B = 45*




*Dia. 4.2: White starts I, $W_1 = 5$*




*Dia. 4.3: White starts II, $W_5 = 10$*

## 1.3 Overview

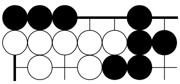
### Basics

'Gote' versus 'sente' are characteristics of local endgame positions, move sequences or values. We classify local endgame positions as 'local gote' and 'local sente'. In a player's local sente, the opponent can play in reverse sente. Local endgames with long sequences demand a finer classification. There are gote sequences and sente sequences. We distinguish gote from sente counts and gote from sente move values.

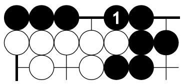
Local evaluation offers the following surprises. An 'ambiguous' local endgame is a hybrid of local gote and local sente. The non-existence of 'local double sente' eases evaluation of other local endgames or suggests evaluation as 'global double sente'. Usually, accurate local-only evaluation already gives very good information about starting or interrupting local play in the global context.

### Continued Sequences versus Options

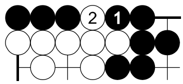
In many local endgames (see *Example 1* and *3 Gote, Sente and Short Sequences* (p. 27)), a player starts a gote sequence, which becomes a sente sequence if the opponent continues. In a few local endgames (see *Example 2* and *4 Gote and Sente Options* (p. 71)), a starting player chooses his gote option or sente option. These two types of local endgames are evaluated differently. Furthermore, we distinguish *short sequences* with at most two plays and *long sequences* with at least three plays. *Example 1* demonstrates short sequences. *Example 2* illustrates long sequences, whose evaluation we learn in *6 Ordinary Evaluation of Long Sequences* (p. 159) and *7 Fast Evaluation of Long Sequences* (p. 217).



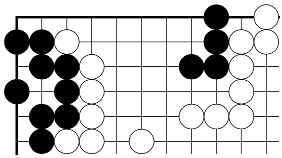
*Example 1*



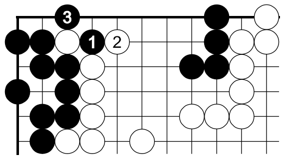

*Dia. 1.1: gote sequence*



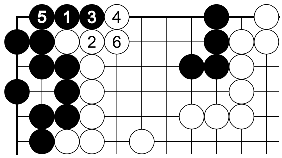

*Dia. 1.2: sente sequence*



*Example 2*




*Dia. 2.1: gote option*



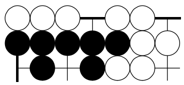

*Dia. 2.2: sente option*

We identify the type of a local endgame with short sequences by comparing two values. We might compare a move value M of a move in the initial position to a follow-up move value F of a move in its child position. Increasing move values indicate a local sente - decreasing move values indicate a local gote. We will also learn alternative value comparisons, with which we can distinguish local sente from local gote.

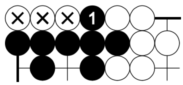
In *Example 1,* Black 1 has the move value M = 1 and White 2 has the follow-up move value F = 3. We call the initial local endgame a local sente because the move values increase. The move value M is smaller than the follow-up move value F: we have M < F <=> 1 < 3.

**Evaluation of Short Sequences**

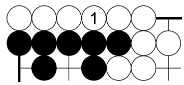
For a local endgame, we consider alternating sequences started by Black or White to characterise it by values. The 'count' is its local positional value. The 'move value' is the value of a move played in the local endgame when comparing the two sequences. The 'gain' of a player's move expresses how much the count of the local endgame differs from the count of the child position created by the move. The values of a local endgame are derived from counts of followers occurring after the two sequences.



*Example 3: local endgame*

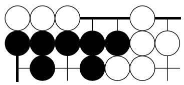


*Dia. 3.1: B = 6*

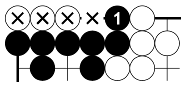


*Dia. 3.2: W = 0*

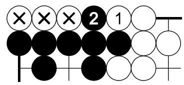
*Example 3:* The local endgame is a simple gote, in which either player's alternating sequence only consists of one play. Black 1 creates the black follower in *Dia. 3.1* with the count B = 6, for which each marked intersection with a captured stone contributes 2 points. White 1 creates the white follower in *Dia. 3.2* with the count W = 0. The move value of the initial local endgame is derived from the counts of its followers. In a simple gote, we reach either follower after a short sequence consisting of one play. The move value M of a simple gote is the difference between the followers' counts divided by 2 so we have M = (B - W) / 2 = (6 - 0) / 2 = 3.



*Example 4: local endgame*

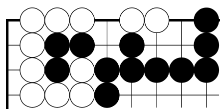


*Dia. 4.1: B = 7*

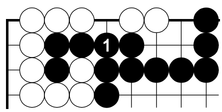


*Dia. 4.2: W = 6*

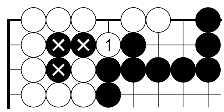
*Example 4:* The local endgame is White's simple sente, in which Black's alternating sequence consists of one play and White's alternating sequence consists of two plays. Black 1 creates the black follower in *Dia. 4.1* with the count B = 7. White's sente sequence creates the white follower in *Dia. 4.2* with the count W = 6. The move value of the initial local endgame is derived from the counts of its followers. The move value M of a simple sente is the difference between the followers' counts: M = B - W = 7 - 6 = 1.



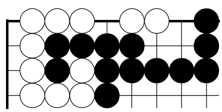
*Example 5: local endgame, M = 4 3/4*



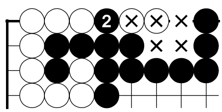
*Dia. 5.1: Black starts*



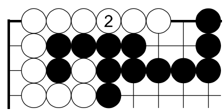
*Dia. 5.2: white follower, W = -6*



*Dia. 5.3: black follower, B = 3 1/2, F = 3 1/2*



*Dia. 5.4: $B_B$ = 7*

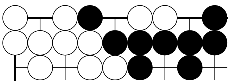


*Dia. 5.5: $B_W$ = 0*

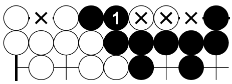
*Example 5:* Black 1 in *Dia. 5.1* creates the unsettled black follower in *Dia. 5.3,* whose values we derive from the counts of its followers. The black follower's black follower in *Dia. 5.4* has the count $B_B$ = 7. The black follower's white follower in *Dia. 5.5* has the count $B_W$ = 0. The count B of the black follower in *Dia. 5.3* is the average of the counts of its followers: B = ($B_B$ + $B_W$) / 2 = (7 + 0) / 2 = 3 1/2. We calculate the local positional value of the black follower as an average for it is equally likely that Black or White continues. The black follower is a simple gote so its follow-up move value F is the difference between its followers' counts divided by 2 so we have $F = (B_B - B_W) / 2 = (7 - 0) / 2 = 3\ 1/2$.

The initial local endgame in *Example 5* might be a simple gote or Black's simple sente. Assume it is a simple gote and derive its move value M from the count B = 3 1/2 of its black follower in *Dia. 5.3* and the count W = -6 of its white follower in *Dia. 5.2.* Negative counts favour White. We calculate the gote move value as the difference between its followers' counts divided by 2 so we have M = (B - W) / 2 = (3 1/2 - (-6)) / 2 = (9 1/2) / 2 = 4 3/4. We confirm our assumption by observing the decreasing move values: the move value M of the initial local endgame is larger than the follow-up move value F of the black follower: M > F <=> 4 3/4 > 3 1/2. Therefore, the initial local endgame is a simple gote indeed. We have calculated its move value M = 4 3/4 correctly. After Black 1, White might make a play of move value approximately 4 somewhere else on the board. This would be more valuable than continuing locally with White 2 in *Dia. 5.5,* whose smaller follow-up move value is F = 3 1/2.

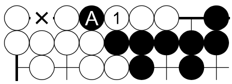
Despite the possible alternating sequence Black 1 - White 2 in *Dia. 5.1 + 5.5,* we do not derive the values of the initial local endgame from the counts of the tentative sente follower in *Dia. 5.5* and tentative reverse sente follower in *Dia. 5.2.* It is not always correct to derive values from the followers created by the longest available sequences.



*Example 6: C = 1, M = 3*

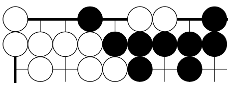



*Dia. 6.1: B = 4*

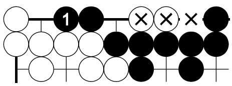



*Dia. 6.2: W = -2*

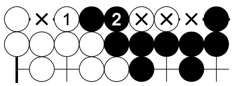
*Example 6:* The local endgame is a simple gote with the gote count C = (B + W) / 2 = (4 + (-2)) / 2 = 1, which is the average of the counts of the followers. The gote move value is M = (B - W) / 2 = (4 - (-2)) / 2 = 3. In *Dia. 6.2,* White has 1 point at A. For consistency with *Example 7,* we include the marked white territory intersection in the locale.



*Example 7: C = 4, M = 1*




*Dia. 7.1: B = 5*

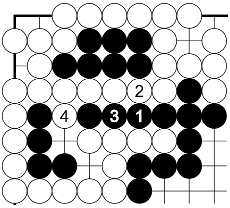



*Dia. 7.2: W = 4*

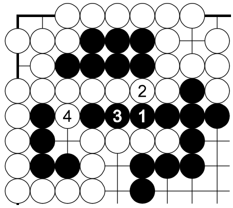
*Example 7:* The local endgame is White's local sente. The sente count C is the count W inherited from the sente follower: C = W = 4. The sente move value M is the difference between the counts of the followers: M = B - W = 5 - 4 = 1. According to *Example 6,* the position created by White 1 has the follow-up move value 3. We know that the initial local endgame is a local sente by observing that the move values increase: the initial move value M = 1 is smaller than the follow-up move value 3. Therefore, we have calculated the right values.

## Evaluation of Long Sequences

In a local endgame, a long sequence is either 'worth playing successively' (called a 'traversal sequence') or 'not worth playing successively'. Some traversal sequences can be interrupted to preserve ko threats.



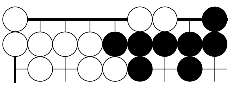

*Example 8: traversal sequence*



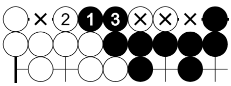

*Example 9: no traversal sequence*

*Example 8:* We have a traversal sequence worth playing successively. Part of the reason is that the initial sente move value 5 is at most White's gain of 5 points of his gote play 4. We compare 5 ≤ 5. Black can preserve play 3 as a ko threat because it has only the smaller sente move value 3. See the next chapter for calculation of move values and gains.

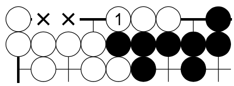
*Example 9:* In a sufficiently rich global environment, the sequence is not worth playing successively. In particular, the initial sente move value 5 is larger than White's gain of 4 1/2 points of his gote play 4. We compare 5 > 4 1/2. On play 4, White prefers to play elsewhere if he finds a play with a move value slightly larger than 4 1/2. *Example 5* shows such a local endgame with the move value 4 3/4, which might be available elsewhere on the board.



*Example 10: local endgame, C = 1, M = 3*



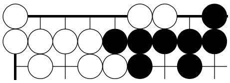

*Dia. 10.1: traversal, B = 4*



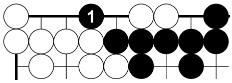

*Dia. 10.2: W = -2*

*Example 10:* We have Black's traversal sequence worth playing successively. Therefore, we derive the values of the initial local endgame from the count B = 4 (which is Black's 5 points minus White's 1 point) of the black follower after his traversal sequence and the count W = -2 of the white follower. Both sequences are gote sequences so the initial local endgame must be a local gote. Its count C is the average of the counts of its followers: C = (B + W) / 2 = (4 + (-2)) / 2 = 1. Its move value M is the difference between its followers' counts divided by 2 so we have M = (B - W) / 2 = (4 - (-2)) / 2 = 3. What do these values mean? Starting from the initial count 1, Black gains 3 points so that the resulting count in *Dia. 10.1* is 1 + 3 = 4. Starting from the initial count 1, White causes Black to lose 3 points so that the resulting count in *Dia. 10.2* is 1 - 3 = -2.

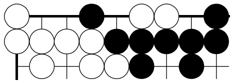
The method of 'making a hypothesis' compares the initial move value to the gains of the plays of the alternating sequences. The method identifies any traversal sequences and confirms that the values of an initial local endgame are derived from counts of their followers. For only the latter purpose, we can sometimes use the method of 'comparing the opponent's branches' or other methods. The following applications are elliptical. The methods are described in detail in the second half of the book.



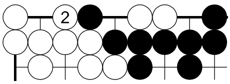
*Example 10[*]: C = 1, M = 3*



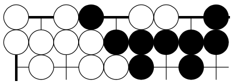

*Dia. 10.3: $G_1$ = 3*



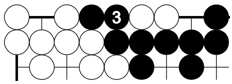
*Dia. 10.4: $C_1$ = 4*



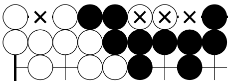

*Dia. 10.5: $G_2$ = 3*



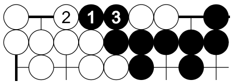
*Dia. 10.6: $C_2$ = 1*




*Dia. 10.7: $G_3$ = 3*

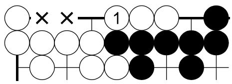


*Dia. 10.8: B = 4*

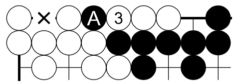



*Dia. 10.9: Black's alternating sequence*

*Method of making a hypothesis:* For *Example 10,* we have already determined the count C = 1 and move value M = 3. Let us study Black's alternating sequence in *Dia. 10.9.* From *Example 7,* we know the count $C_1 = 4$ of the position in *Dia. 10.4* after move 1. From *Example 6,* we know the count $C_2 = 1$ of the position in *Dia. 10.6* after move 2. The settled position in *Dia. 10.8* after move 3 has the count B = 4. Hence, it is easy to see that each play gains 3 points. The gain of move 1 (Black 1) in *Dia. 10.3* is $G_1 = 3$ because Black 1 increases counts by 3. The gain of move 2 (White 2) in *Dia. 10.5* is $G_2 = 3$ because White 2 decreases counts by 3 (recall that White's gain is Black's loss). The gain of move 3 (Black 3) in *Dia. 10.7* is $G_3 = 3$ because Black 3 increases counts by 3. We assume that the move value M is at most each gain and confirm this by comparing the values: we have $M \leq G_1$ <=> $3 \leq 3$ and $M \leq G_2$ <=> $3 \leq 3$ and $M \leq G_3$ <=> $3 \leq 3$. This is the most important reason why Black's alternating sequence is a traversal sequence and our earlier calculation of the values of the initial local endgame has been correct.

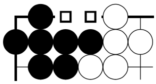



*Dia. 10.10: White's branch I, $C_{W1}$ = -2*

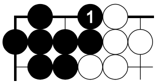



*Dia. 10.11: White's branch II, $C_{W3}$ = -2*

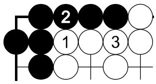
*Method of comparing the opponent's branches:* We evaluate Black's alternating sequence in *Dia. 10.9.* On move 1, White's branch I in *Dia. 10.10* results in the count $C_{W1}$ = -2. After move 2 of Black's alternating sequence, White's branch II in *Dia. 10.11* with White 3 results in the count $C_{W3}$ = -2. The method compares these two branch counts. White minimises counts so decreasing or constant



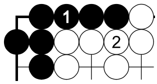
*locale of the local endgame*




*gote sequence, odd number of 1 play*

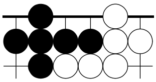



*gote sequence, odd number of 3 plays*

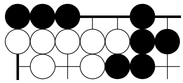



*sente sequence, even number of 2 plays*

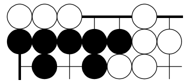
A **local gote** is a local endgame with each player's gote sequence. A player's **local sente** is a local endgame with his sente sequence and the opponent's gote sequence. We can use these informal definitions until we define these and other types of local endgames later in the book. See *Volume 2* for the distinction between local gote or sente versus global gote or sente. In *Volume 3,* we concentrate on local evaluation.



*local gote*

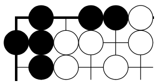


*Black's local sente*

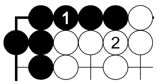


*White's local sente*

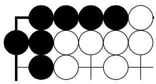
In a local endgame, a **follower** is a follow-up position. In a local endgame, the sequence started by Black results in the *black follower* and the sequence started by White results in the *white follower.* A *stable follower* is a follower in which the value of a next move is significantly smaller than the values of the preceding moves. A *child* of a position is a direct follower after one move. A position has black children and white children. Every black child of a position is a *sibling* of every white child of it - and vice versa.



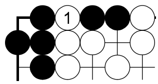
*local endgame*



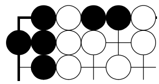

*Black's sequence*



*black follower*




*White's sequence*



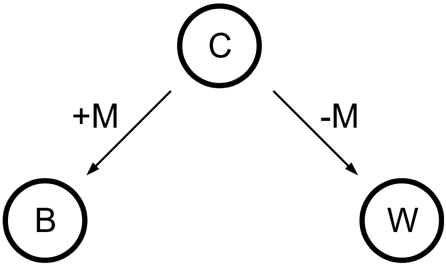
*white follower*

*Modern endgame theory* evaluates positions and moves, and integrates move value and count consistently. Counts are the values of positions. Move values and gains are the values of moves. Net profits combine gains to assess sequences. A move value is always a value per excess play, relates the counts of the black and white followers, allows direct comparison of move values of local gote, local sente and ordinary kos so, usually, we can play moves in order of their decreasing move values. A gain expresses how much a player's move shifts a count in his favour.

The **count** is the value of a position predicting the score. We consider the count **C** of the initial position of a local endgame, the count **B** of its black follower and the count **W** of its white follower. The count of a *settled* position is calculated as Black's local points minus White's local

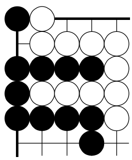
## 3.1 Simple Gote without Follow-up

A local gote endgame without valuable follow-ups after either player's first play is called a *simple gote without follow-up.* It has a gote count and gote move value.

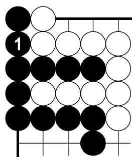



*simple gote without follow-up*

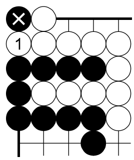
The value tree is an optional aid and illustrates a simple gote without follow-up and arbitrary values. A circle represents a position, the left arrow represents Black's move and the right arrow represents White's move. The upper circle is the initial local position with the count C. The lower left circle represents the black follower with the count B. The lower right circle represents the white follower with the count W. We have the gote move value M. Black gains +M on Black's move. Black gains -M on White's move. Black's negative gain expresses Black's loss.



*Example 1: simple gote without follow-up*



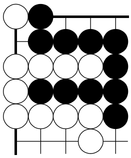

*Dia. 1.1: Black starts, B = 0*



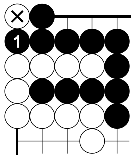

*Dia. 1.2: White starts, W = -2*

*Example 1:* Either player starts a short sequence consisting of one play. Without further valuable follow-up play after either sequence, we call the local endgame a simple gote without follow-up. The black follower created in *Dia. 1.1* has the count B = 0. The white follower created in *Dia. 1.2* has the count W = -2. The simple gote in the initial position in *Example 1* has the gote count C = (B + W) / 2 = (0 + (-2)) / 2 = -1 and gote move value M = (B - W) / 2 = (0 - (-2)) / 2 = 1.

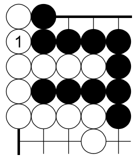
*Example 2:* We have a simple gote without follow-up. Either player starts a short sequence consisting of one play. The black follower created in *Dia. 2.1* has the count B = 2. The white follower created in *Dia. 2.2* has the count W = 0. The simple gote in the initial position in *Example 2* has the gote count C = (B + W) / 2 = (2 + 0) / 2 = 1 and gote move value M = (B - W) / 2 = (2 - 0) / 2 = 1.



*Example 2: simple gote without follow-up*




*Dia. 2.1: Black starts, B = 2*



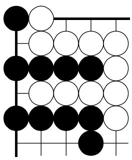

*Dia. 2.2: White starts, W = 0*

## 3.2 One Player's Follow-up

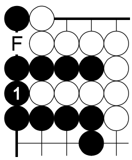
In this section and the following three sections, we study very frequent local endgames with one player's follow-up and short sequences consisting of one or two plays. Afterwards, only encores or passes with the move value 0 remain.

We study local endgames in which one player's first move creates a follow-up position that is a simple gote without follow-up. In the initial local endgame, the player starts a sequence that can be two plays long. If he continues, the sequence consists of his two successive plays. If the opponent continues, we have a sente sequence. In the initial local endgame, the opponent starts a sequence consisting of one play.

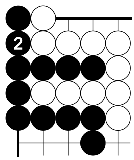
The *creator* is the player creating the follow-up position with follow-up play. If the initial local endgame were always a local sente, we would call him the 'sente player'. Since the initial local endgame can also be a local gote, this would not always make sense. Therefore, we invent the term 'creator'. The opponent is the *preventer* because his first move prevents the creator from creating the follow-up position.



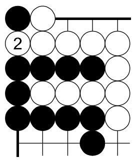
*Example 1: local endgame*



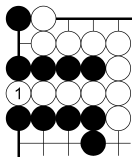

*Dia. 1.1: follow-up F*




*Dia. 1.2: Black continues*



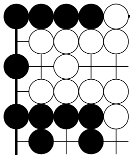

*Dia. 1.3: White continues*



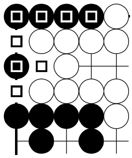

*Dia. 1.4: no follow-up*

*Example 1:* The local endgame has Black's follow-up. Black is the creator. After Black starts in *Dia. 1.1,* the initial local endgame's follow-up F remains, which is the simple gote without follow-up in *Example 1* in the previous section. Either Black continues in *Dia. 1.2* or White continues in *Dia. 1.3* completing a short sequence consisting of two plays. If White starts in *Dia. 1.4,* there is no follow-up and the short sequence consists of one play. We evaluate the initial local endgame in *3.3 Black's Follow-up* (p. 31).

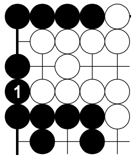
**Example 3 (ambiguous)**



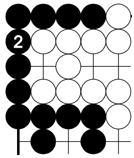
*Example 3: initial position*



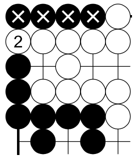
*Dia. 3.1: locale*



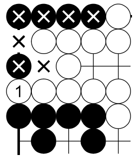

*Dia. 3.2: follower B*




*Dia. 3.3: follower $B_B$*




*Dia. 3.4: follower $S = B_W$*




*Dia. 3.5: white follower R*

*Counts of followers:* We have the counts $B_B = 0$, $S = B_W = -8$, $B = (B_B + B_W) / 2 = (0 + (-8)) / 2 = (0 - 8) / 2 = -8/2 = -4$ and $R = -12$.

*Conditions 1:* The initial local endgame has the tentative sente count $C_{SENTE} = S = -8$, has the tentative gote count $C_{GOTE} = (B + R) / 2 = (-4 + (-12)) / 2 = (-4 - 12) / 2 = -16/2 = -8$ so is 'ambiguous' because the tentative sente count equals the tentative gote count: $C_{SENTE} = C_{GOTE} \iff -8 = -8$.

*Conditions 2:* The initial local endgame has the tentative gote move value $M_{GOTE} = (B - R) / 2 = (-4 - (-12)) / 2 = (-4 + 12) / 2 = 8/2 = 4$. The follow-up position B has the move value $F = (B_B - B_W) / 2 = (0 - (-8)) / 2 = (0 + 8) / 2 = 8/2 = 4$. The local endgame is 'ambiguous' because the tentative gote move value equals the follow-up move value: $M_{GOTE} = F \iff 4 = 4$.

*Conditions 3:* The initial local endgame has the tentative sente move value $M_{SENTE} = S - R = -8 - (-12) = -8 + 12 = 4$. The follow-up position B has the move value $F = (B_B - B_W) / 2 = (0 - (-8)) / 2 = (0 + 8) / 2 = 8/2 = 4$. The local endgame is 'ambiguous' because the tentative sente move value equals the follow-up move value: $M_{SENTE} = F \iff 4 = 4$.

*Conditions 4:* The initial local endgame has the tentative sente move value $M_{SENTE} = S - R = -8 - (-12) = -8 + 12 = 4$, has the tentative gote move value $M_{GOTE} = (B - R) / 2 = (-4 - (-12)) / 2 = (-4 + 12) / 2 = 8/2 = 4$ so is 'ambiguous' because the tentative sente move value equals the tentative gote move value: $M_{SENTE} = M_{GOTE} \iff 4 = 4$.

*Values:* In an ambiguous local endgame, its count and move value can be calculated as if it were a local gote or local sente. The theory guarantees for the local endgame in the initial position that the gote count equals the sente count and the gote move value equals the sente move value. We may choose our preferred calculation. Inheriting the sente count is much easier than calculating the gote count. The initial local endgame's gote count $C = C_{GOTE} = (B + R) / 2 = (-4 + (-12)) / 2 = (-4 - 12) / 2 = -16/2 = -8$ equals the sente count $C = C_{SENTE} = S = -8$ and the gote move value $M = M_{GOTE} = (B - R) / 2 = (-4 - (-12)) / 2 = (-4 + 12) / 2 = 8/2 = 4$ equals the sente move value $M = M_{SENTE} = S - R = -8 - (-12) = -8 + 12 = 4$ and equals the follow-up move value $F = 4$.

**Conditions for Local Gote**

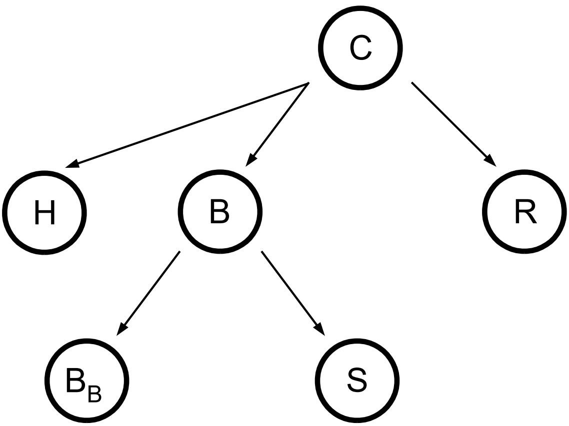
| Local Endgame | Perspective | Counts | Move Values |
|---|---|---|---|
| Black's options | Black's | $C_{SENTE} < C_{GOTE}$ | $M_{SENTE} < M_{GOTE}$ |
| White's options | | $\mathbf{C_{SENTE} > C_{GOTE}}$ | |
| | White's | $\overline{C}_{SENTE} < \overline{C}_{GOTE}$ | $\overline{M}_{SENTE} < \overline{M}_{GOTE}$ |

**Conditions for Local Sente**

| Local Endgame | Perspective | Counts | Move Values |
|---|---|---|---|
| Black's options | Black's | $C_{SENTE} > C_{GOTE}$ | $M_{SENTE} > M_{GOTE}$ |
| White's options | | $\mathbf{C_{SENTE} < C_{GOTE}}$ | |
| | White's | $\overline{C}_{SENTE} > \overline{C}_{GOTE}$ | $\overline{M}_{SENTE} > \overline{M}_{GOTE}$ |

## 4.1 Black's Options

Consider a local endgame with Black having a gote sequence resulting in the count **H** or a different sente sequence resulting in the count **S** and White having a gote (or reverse sente) sequence resulting in the count **R.**



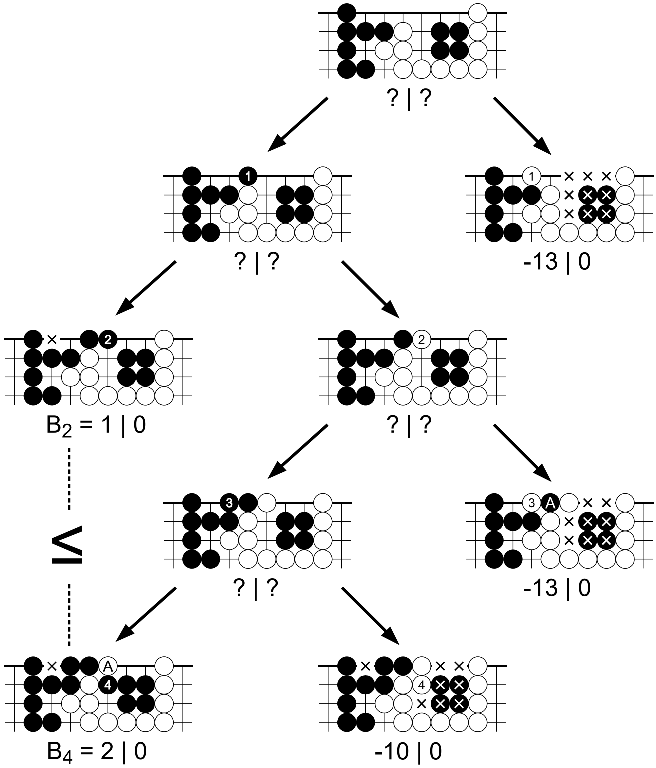

*local endgame with Black's options*

Black has the gote option with a gote sequence to H and the sente option with the sente sequence via B to S = $B_W$. The sente follower S and B's white follower $B_W$ are identical so their counts are equal. Black continuing from B results in $B_B$. White has a gote sequence to R.

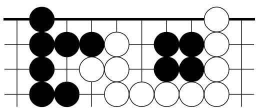
**To characterise the local endgame as a local gote, 'ambiguous' or Black's local sente, we need to verify three aspects:**

- **the sequence to H is a local gote option,**
- **the sequence to S is Black's local sente option and**
- **the correct condition.**

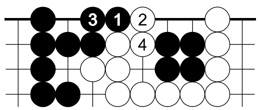
**Example 7**



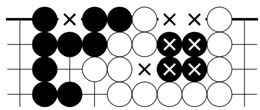

*Dia. 7.1: tree*



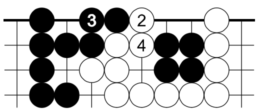
*Example 7: Black's local sente, **C** = -10, **M** = 3*



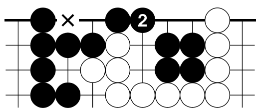
*Dia. 7.2: Black's alternating sequence*



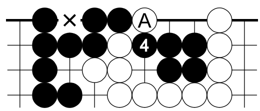
*Dia. 7.3: settled, S = -10*



*Dia. 7.4: White's alternating 3-move sequence*



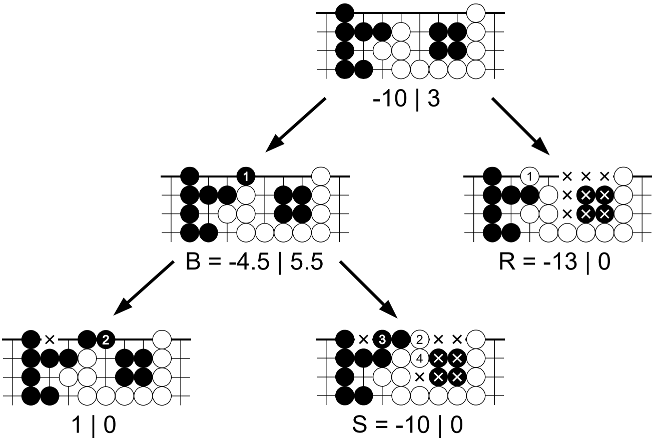
*Dia. 7.5: Black's branch I, $B_2$ = 1*



*Dia. 7.6: Black's branch II, $B_4$ = 2*

*Example 7:* Is Black's alternating sequence in *Dia. 7.2* a simplified sequence? We answer this question by analysing backwards. First, we verify that White's alternating 3-move sequence in *Dia. 7.4* is a simplified sequence. Second, we analyse like for a simple sente. Third, we conclude that Black's alternating sequence in *Dia. 7.2* a simplified sequence.

For verifying that White's alternating 3-move sequence in *Dia. 7.4* is a simplified sequence, we check the conditions. The positions before moves 2, 3 or 4 are unsettled. The resulting position in *Dia. 7.3* is settled. Black's branches at moves 2 or 4 result in the positions in *Dia. 7.5* or *7.6,* respectively. Since these branch positions are settled, we may compare them by simply comparing their counts $B_2 = 1$ or $B_4 = 2$. They increase or are constant: $B_2 \leq B_4 \iff 1 \leq 2$. All necessary conditions are fulfilled so White's alternating 3-move sequence in *Dia. 7.4* is a simplified sequence. Therefore, we may simplify the tree in *Dia. 7.1* as in *Dia. 7.7* and evaluate the initial local endgame as if it is a simple gote or sente.




*Dia. 7.7: simplified tree*

See *Example 2* for calculation of the values of the black child. We have to verify whether the simplified tree in *Dia. 7.7* behaves like a simple sente. The local endgame in the initial position has the tentative gote move value $M_{GOTE} = (B - R) / 2 = (-4.5 - (-13)) / 2 = 4.25$ calculated from the counts of the children and Black's tentative sente move value $M_{B,SENTE} = S - R = -10 - (-13) = 3$ calculated from the counts of Black's sente follower and White's reverse sente follower. Since the tentative gote move value is larger than Black's tentative sente move value, $M_{GOTE} > M_{B,SENTE} \iff 4.25 > 3$, Black's alternating sequence is Black's long sente sequence. The combination of its initial position being unsettled, its sente start and the already confirmed simplification of its last three moves let it be a simplified sequence.

White's alternating sequence (see *Dia. 7.1* for White 1 played in the initial position) is White's short gote sequence. The local endgame in *Example 7* is Black's local sente with the sente traversal count **C** = S = -10 inherited from the count of Black's sente follower and sente traversal move value **M** = $M_{B,SENTE}$ = 3.