

**Polysemous Verbs in Jambi Malay: an Optimization of Interpretation
Approach**

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1. Introduction

In daily life, people often make a statement or express an utterance about the possibility that something is the case. People do not always know what exactly happens in this world: some assumptions can be based on the real world, like some phenomena that may refer to what is being assumed, for example a dark cloud in the sky that can be used to predict rain, while others can be just based on the speaker's belief that something is the case. When a speaker uses a proposition to describe the likelihood that something is the case, it means that the proposition has an epistemic reading. To convey that something is the case with less than a hundred percent certainty, in English, people can use an adverb such as *probably* or *likely*, a modal verb like *may*, *might*, *can*, or *should*, a complementation strategy such as *it seems that*, or a certain verb like *think*, *guess* and *suppose*. In Jambi Malay, people also can use an adverb, a modal verb, a complementation, or a certain verb for such a reading.

Some verbs in Jambi Malay which can have an epistemic reading are *raso* 'feel' and *kato* 'say'. These lexemes can function as a noun as well as a verb. Both of them can also be inflected by certain affixes. However, in this study I will focus only on their functions as a bare verb.

Even though these two verbs may have an epistemic reading, they do not belong to the same category. Both are also not categorized as modal verbs. *Raso* is a kind of mental verb, while *kato* is a speech act verb. I assume that the default meaning of the bare verb *raso* is 'feel' (experiencer-like), while the basic meaning of the bare verb *kato* is 'say' (factual information). I will explain this analysis in chapter 3 and 4 of this thesis, respectively. Below are examples of sentences with the bare verbs *raso* and *kato*.

- (1) Lapar raso prUt
 hungry feel stomach
 "I feel hungry."

- (2) Kato paman tana kitoko sUbUr
 say uncle land 1stPL-KO fertile
 “Uncle said that our land is fertile.”

In addition to the above interpretations, each of these two bare verbs also has other interpretations. Below is given the expansion of the interpretations of the bare verbs *raso* and *kato*.

- (3) Aku raso pallng aman dioq di jaMi
 1stSg feel most safe 3rdSg LOC Jambi
 “I think the safest place for him is Jambi.”

- (4) Kau raso reza tu
 2ndSg feel Reza that
 “Please examine Reza.”

- (5) Kato aku baju tu eloq
 say 1stSg garment that beautiful
 “I thought the dress was good.” (In fact it is not.)

- (6) Kato kau baju tu eloq
 say 2ndSg garment that beautiful
 “You told me that the dress was good.” (But in fact it is not, so why did you say that?)

From the above examples we see that each of the bare verbs may have multiple interpretations. For the bare verb *raso*, it is obvious in sentences (1) and (3) that they have related meanings, while the relation of meanings between *raso* in sentences (3) and (4) is not clearly seen. However, in this study I will argue that the three interpretations of the bare verb *raso* are all related and hence it can be categorized as a polysemous verb.

For the bare verb *kato*, I think it is obvious that the three interpretations in the sentences (2), (5), and (6) have related senses. But how can each of them have different interpretations? This is the question of this study that I will try to answer in chapters 3 and 4.

Polysemy can bring ambiguity to the interpretation of items and is considered one of the most difficult problems in language processing studies. It is the core of lexical semantic research. A collection of research on polysemy can be found in Pustejovsky and Boguraev (1996). All articles in their monograph use different approaches in analysing polysemy. However, there are at least three major subthemes that run through all of the articles. One of them is the analysis of logical polysemy as a compositional process (Pustejovsky and Boguraev 1996: 2). Some of the articles, written by Copestake and Briscoe and by Pustejovsky and Bouillon, argue that logical polysemy and novel senses are the result of the logical make-up and semantics of the lexical items in composition. In relation to the polysemous verbs of Jambi Malay, *raso* and *kato*, I will have the same argumentation as these four authors. Without further context, interpretations of an ambiguous item in a sentence might be resolved by considering other items surrounding it. Items in a composition that I will pay more attention to in this study are person markers. Why person markers? The reason is that not many studies focus on the interaction between person markers and ambiguous items in the semantic composition of a sentence.

One article that already discussed the different interpretations of an ambiguous item in relation to person markers is Foolen and de Hoop (to appear). One of their claims is that different interpretations of the modal verbs *moeten* and *kunnen* in Dutch are also due to the subject person used in sentences. They argue that a sentence with a third person pronoun with the modal verb *might* which commonly favours an epistemic reading will shift its interpretation when the subject is a second person pronoun. The reading that will emerge is a participant-external reading.

For the analysis of the bare verbs *raso* and *kato*, I will make use of Jambi Malay Corpus that contains natural spoken data of various genres including narratives (personal narratives, history of Jambi, and folktales) and conversations on various topics. The data are compiled in FileMakerPro software consisting of 60558 records. In the corpus I made

a selection within the recording units. Besides the Jambi Malay corpus, I also collected data from conversations I had with other Jambi Malay speakers and wrote my own sentences down, and then had those sentences confirmed by three Jambi Malay speakers.

In addition to analyzing the different meanings of the bare verbs *raso* and *kato* in Jambi Malay I would also like to see how people come to the right interpretation, by which I mean the interpretation that the speaker intended. Since there are some possible interpretations of each of these bare verbs, the interpretations might be in conflict with each other. However, people are usually able to come to the right interpretation. Which constraints make one interpretation better than the others? In this thesis I will make use of Optimality Theory to answer the question. Since the study focuses on meaning, I will make use of Optimality Theoretic semantics (OT semantics). OT semantics, developed by Hendriks and de Hoop (2001), accounts for the association of each grammatical expression with an infinite number of interpretations. The candidate interpretations are generated from a syntactic input and will be evaluated by ranked constraints in parallel. So, in OT semantics it is the hearer's perspective that is taken into account (Blutner, Hendriks, & de Hoop 2006).

To sum up, in this thesis I will focus on the analysis of the bare verbs *raso* and *kato* in Jambi Malay. I will examine how the bare verbs shift their interpretations and make use of conflicting constraints in OT to evaluate the different interpretations of the bare verbs *raso* and *kato* and to find out the optimal interpretation.

This thesis will be outlined as follows. In chapter 2, an Optimality Theoretic account is presented. Furthermore, two articles on OT semantics of polysemous items will be reviewed. They are Zwarts' (2004) on "The competition between word meanings: the polysemy of (*a*)round" and Foolen and de Hoop's (to appear) on "Conflicting constraints on the interpretation of modal auxiliaries." Chapters 3 and 4 will discuss the two polysemous verbs, the bare verbs *raso* and *kato* in Jambi Malay, respectively. The optimization process for each interpretation in OT Semantics is also discussed under each subsections 3 and 4. In this study, the glossing I use for each verb is taken from the basic meaning only. In the analysis of OT for each polysemous verb, the output meanings in all tableaux are taken from all possible interpretations of the verb. Finally, there is a general conclusion in chapter 5.

2. An Optimality Theoretic Account

In this chapter I will discuss a formal semantic approach to describing properties of language. The formal framework for this is called Optimality Theory (henceforth OT). To make the idea of this approach clearer, I will review two articles that deal with the optimization process of interpretations of polysemous items in Optimality Theoretic semantics. Some of the constraints used in the two articles will also be used for the optimization process of interpretations of the bare verbs *raso* and *kato* in Jambi Malay since I think some of them are relevant to these verbs.

2.1 Basic Concepts of OT

Optimality Theory is a linguistic model which explains language phenomena in terms of violable constraints. The constraints are assumed to be universal. This means that languages share the same set of constraints. The difference among the languages is only in the ranking of the constraints. Those constraints are soft, which means that they can be violated. A constraint can be violated but only in order to satisfy a stronger constraint. The theory has three basic components i.e. GEN (generator), CON (constraint), and EVAL (evaluator). GEN generates the list of possible outputs, or candidates. CON provides the criteria, violable constraints, used to decide between candidates (to get the optimal one), and EVAL chooses the optimal candidate (cf. Blutner, Hendriks, & de Hoop 2006; Smolensky and Legendre 2006).

OT was introduced by Alan Prince and Paul Smolensky in the early nineties at the University of Arizona Phonology Conference in Tucson. So, the first area of linguistics that made use of this theory is phonology. OT then grew rapidly in this field. Gradually, this theory spread to other fields of linguistics to areas such as morphology, syntax, semantics and pragmatics. In phonology, the input is an underlying linguistic form. The output is the form as it is expressed. In syntax, the input is a meaning (a concept that a speaker intends to express to his addressee) and the output is a form (a composition of words in a sentence/utterance that represents the meaning). In semantics, the input is taken from a form and the output is the meaning of the given form. The process of

evaluation of the possible candidate outputs through a set of ranked constraints is illustrated in OT by means of an OT tableau (Blutner, Hendriks, & de Hoop 2006).

In this thesis I will make use of OT semantics to account for the way each interpretation of the bare verbs *raso* and *kato* becomes optimal. Before coming to the discussion of these two verbs and the evaluation of their interpretations in OT semantics, I will give an overview of OT semantics in the following section and give examples of some analyses of the optimization process of interpretations of polysemous items in OT semantics.

2.2 OT Semantics

OT semantics was developed by Hendriks and de Hoop (2001) and accounts for the association of each grammatical expression with an infinite number of interpretations. As already said before, the candidate interpretations are generated from a syntactic input and will be evaluated by ranked constraints in parallel. So, in OT semantics it is the hearer's perspective which is taken into account. A set of constraints and ranking between those constraints are based on general principles of rational communication (Blutner and Zeevat 2004).

Studies applying OT semantics have been conducted recently. Some of them are Zwarts' (2004) on "The competition between word meanings: the polysemy of (*a*)round," and Foolen and de Hoop's (to appear) on "Conflicting constraints on the interpretation of modal auxiliaries." To make the idea of OT semantics clearer, in the following subsections I will give an account of polysemy as well as a review of these two studies.

2.2.1 Polysemy

Lexical ambiguity is considered one of the most difficult problems in language processing studies and is the core of lexical semantic research. Most words in a language have more than one meaning but the ways in which these words carry multiple meanings can vary. Some terms which refer to the lexical ambiguity are: homophones, homographs, homonymy and polysemy. The first three terms refer to ambiguous words

that have distinct, unrelated meanings, while the last one refers to ambiguous words with related senses (cf. Pustejovsky and Boguraev 1996; Klepousniotou 2007).

The distinction between homonymy and polysemy was made early on in linguistic theory. One of the linguists who observed linguistic differences among ambiguous lexical items and who distinguished between two types of lexical ambiguity was Weinreich in 1964 (Klepousniotou 2007: 18). The first type is called *contrastive ambiguity* (traditionally called *homonymy*). This is seen when a lexical item accidentally carries two distinct and unrelated meanings. The most famous example word for this is *bank*. In sentences *John lay down on the bank of the river* and *The Royal Bank is the largest*, the word *bank* has the meanings ‘river side’ and ‘financial institution’, respectively. The other type involves lexical senses which are manifestations of the same basic meaning of words as it occurs in different contexts. The example given in Klepousniotou (2007) is *door*. In the sentences *Mary painted the door*, and *Mary walked through the door*, the word *door* in the first sentence refers to the ‘physical object’, whereas in the second sentence it refers to the ‘aperture’. However, the basic meaning of the word is the same in both sentences. These sense distinctions are referred to as *polysemy* (Klepousniotou 2007: 18-19).

Even though there has been made a distinction between homonymy and polysemy, some linguists argue that the distinction is not quite clear (Németh and Bibok 2001; Klepousniotou 2007). It seems problematic because there is no clear-cut dichotomy between the two. Klepousniotou (2007) proposes two ways of circumventing the problem of having a clear dichotomy between homonymy and polysemy i.e. either to maximize homonymy or to maximize polysemy. The way in which the problem is dealt with will depend on the solution that is chosen. Klepousniotou’s proposal, however, is not very clear. She does not give any explanation on how to maximize each term. What she gives in her paper are only the implications of maximizing the two terms. “If homonymy is maximized, every distinct meaning of an ambiguous word will be associated with a different word-form in the lexicon. As a result, there would be a highly expanded lexicon which would store separately every meaning a word has. On the other hand, maximization of polysemy (e.g. Lyons 1977) would result in a much reduced lexicon

since the different meanings of a word would be associated with a single representation in the lexicon”.

Németh and Bibok (2001) argue that the extension of the term *polysemy* should be theory-dependent. This argument is based on two things. Firstly the vagueness of how strongly meanings should be allowed to differ so that those meanings can still be considered to be related. Secondly how strongly meanings have to differ so that they can be considered to be two different meanings and not just variations of a single meaning. The decision of the two questions depends on two factors: (1) the architecture of the lexicon that is assumed by a theory and (2) how powerful the system of the relations is that relates two possible meanings of a single word to each other.

Even though the problem of distinguishing between homonymy and polysemy has not been resolved yet, a number of studies on lexical ambiguity have been conducted (Nunberg 1979, 1995; Fauconnier 1985; Martin 1990 cf. Pustejovsky and Boguraev 1996: 16; Evans and Wilkins 2000, and Evans 2005). The work on systematic polysemy has emphasized the conceptual or cognitive nature of the transfers or mappings which underlie such processes. This work is considered important in mapping out the range of possible conceptual transfers available and also in motivating their existence. This is what I did in analyzing the bare verbs *raso* and *kato* in Jambi Malay. I try to give an explanation on how those verbs might have several interpretations in some (linguistic) contexts. The result will be suggestive rather than conclusive since the analysis is limited only to sentences in the corpus and some sentences taken from my conversations with friends who also speak Jambi Malay. I myself use the term *polysemy* for a word that has some related senses since this definition seems to be the standard definition of polysemy in most of the literature.

2.2.2 Zwarts (2004)

One of the first who applied OT in the realm of ambiguous items (polysemy) is Zwarts (2004). He argues that a formal tool is needed to define more precisely what the meanings of a polysemous spatial item are. He also argues that one of the tools that can help us to do so is OT since it gives us a general framework to study how these meanings

compete with each other and which meaning is optimal given a ranked set of general constraints.

A lexical item that he discusses in his article is the preposition *(a)round*. He models the different meanings of this item in terms of a set of paths. A path is defined as “a sequence of *vectors* located with their starting point in one common origin”. The notion of path is formalized as a function \mathbf{p} from the real interval $[0, 1]$ to \mathbf{V} , a three-dimensional vector space. According to Zwarts (2004), the function should be *continuous* and *dynamic*. A path function is continuous when its graph is an unbroken curve and it is dynamic if it is not a constant function on any subinterval of its domain.

Below are the illustrations of what a prototypical path for *round* look like (in five snapshots) provided by Zwarts (2004).

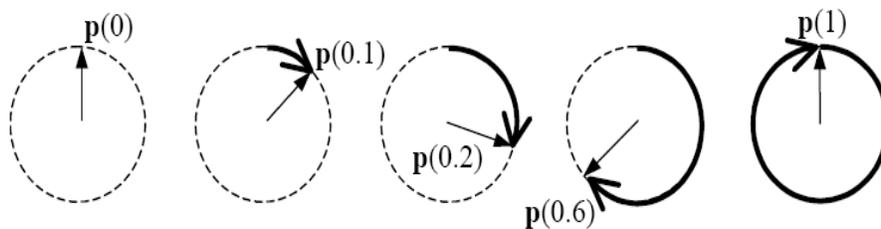


Figure 1: Vectors from a prototypical *round* path

The prototype of *(a)round* is a set of paths that has certain properties. Zwarts argues that the strong prototype meaning of *(a)round* is a perfect circle, labelled as CIRCLE. The properties that characterize this CIRCLE are the following:

COMPLETENESS: a vector can be directed to all directions from the centre of the path.

CONSTANCY: all the vectors of a circular path have the same length

UNIQUENESS: a path does not change direction. Normal paths do not touch a place more than once.

Besides the above properties, a circular path also may have other properties, called weak COMPLETENESS. They are INVERSION, ORTHOGONALITY, and DETOUR.

INVERSION: two of a path's vectors point in *opposite* directions; a path is at least a half-circle.

ORTHOGONALITY: two of a path's vectors point in *perpendicular* directions, a path at least a quarter-circle.

DETOUR: direct distance between a path's starting point and end point is smaller than the length of the path measured along the path.

Another characteristic of a path is the so-called LOOP.

LOOP: the path's starting point and end points are identical.

By considering the CONSTANCY, the ordering of five properties of *(a)round* is as follows, from stricter to weaker, or, from longer to shorter paths along a circle:

LOOP = COMPLETENESS > INVERSION > ORTHOGONALITY > DETOUR

These five properties, considered to be the interpretations of *(a)round*, are used as the output candidates of a given input form of *(a)round* in a particular context. In interpreting a sentence with *(a)round*, the linguistic context must first be taken into account. In addition to the context, an optimal output is also chosen based on the strength of the interpretation. LOOP = COMPLETENESS is the strongest interpretation and DETOUR is the weakest one. Therefore, there are two violable constraints used by Zwarts to get an optimal candidate for a given form of *(a)round* i.e. STRENGTH and FIT. FIT is placed higher than STRENGTH.

STRENGTH: stronger interpretations are better than weaker interpretations

FIT : interpretations should not conflict with the (linguistic) context

An example of the optimization process for getting the best interpretation of *(a)round* is illustrated in the following tableau.

Tableau 1. An OT tableau for the interpretation of *round the door*

<i>round the door</i>	FIT	STRENGTH
LOOP = COMPLETENESS	*!	
☞ INVERSION		*
ORTHOGONALITY		**!
DETOUR		***!

The candidates are ordered according to their strength. ‘COMPLETENESS or LOOP’ satisfies STRENGTH because it is the strongest candidate but it does violate FIT. This is the case since the fact that a door usually connected to a wall makes it impossible to have a complete path round it. Since it violates the highest constraint, it is then no longer a valid option. The other candidates do not violate FIT. The weakest candidate ‘DETOUR’ violates STRENGTH three times because there are other three possible stronger interpretations. Since FIT is ranked higher than STRENGTH, the second candidate which only violates STRENGTH once comes out as being optimal.

2.2.3 Foolen and de Hoop (to appear)

An evaluation process of interpretations of ambiguous items in formal semantics is also conducted by Foolen and de Hoop (to appear). Foolen and de Hoop investigate the interplay of some factors when interpreting sentences with the modal verbs *moeten* ‘must’ and *kunnen* ‘can’ in Dutch. They make use of Optimality Theoretic semantics to account for the interaction of different constraints that come into play when interpreting

the modal verbs. Three well-known modal readings are used as candidate meanings for a sentence with one of these two modal verbs i.e. ‘participant-internal’, ‘participant-external’ and ‘epistemic’ (Van der Auwera and Plungian 1998, cf. Foolen and de Hoop, to appear).

A participant-internal reading is defined as an interpretation where the notion of possibility or necessity is based on the internal need/ability of a participant. A participant-external reading is an interpretation in which a possibility or necessity experienced by a participant is based on external forces. Finally, an epistemic reading is a reading which describes an estimation of the likelihood that a certain state of affairs is the case. This reading says something about the degree of certainty/uncertainty that something is the case.

The investigations of the different interpretations of the modal auxiliaries are based on three items. They are the basic meaning of the modal verbs, the lexical and aspectual properties of the main predicate, and the grammatical category ‘person’ of the subject used in the sentence.

The first factor that they argue to be a constraint for the optimization of interpretations of the two modal verbs is the basic meaning. They argue that the basic meaning of *kunnen* ‘can’ is an ability interpretation, while the basic meaning of *moeten* ‘must’ is a deontic interpretation. Based on this claim, they propose a constraint as follows:

- *MEANING SHIFT: a. *kunnen* ‘can’ gets an ability interpretation
- b. *moeten* ‘must’ gets a deontic interpretation

The examples given are the following:

- (7) Hij kan zwemmen.
he can swim
“He can swim.”

- (8) Hij moet zwemmen.
 he must swim
 “He must swim.”

The interpretation of sentence (7) is argued to have a participant-internal (ability) reading, i.e. the sentence expresses the subject’s ability to swim. The participant-internal reading of this sentence means that this sentence is used only to describe the ability of the third person to swim. This sentence might have another interpretation when there is a specific context, for example, a speaker allows the subject to swim since there is a swimming pool nearby, or it is the subject’s turn to swim. The basic interpretation of sentence (8) is argued to have a participant-external (deontic) reading. That sentence expresses that there is an external force that makes the subject swim, for example because of a doctor’s advice. In addition to a participant-external reading, sentence (8) is also argued to have a participant-internal reading. This is the case when the subject has internal forces driving him to swim. Furthermore, an epistemic reading can also emerge when the speaker is making an assumption that it is likely that the subject is swimming. The first interpretations of these two sentences mean that the interpretations are obtained merely by looking at the linguistic context. Further context is not taken into account.

The evaluation process of the interpretations to get the optimal interpretations for the two sentences is illustrated in the following tableaux.

Tableau 2. Derivation of the participant-internal (ability) reading of *kunnen* ‘can’

<i>Hij kan zwemmen</i> he can swim	*MEANING SHIFT
☞ Participant-internal	
Participant-external	*!
Epistemic	*!

Tableau 3: Derivation of the basic reading of *moeten* ‘can’

<i>Hij moet zwemmen</i> he must swim	*MEANING SHIFT
Participant-internal	*!
☞ Participant-external	
Epistemic	*!

The constraint used to filter out the candidate outputs in the above tableaux is only *MEANING SHIFT. Since there is no further context provided for these two inputs, each of them directly refers to the basic reading. Therefore, for tableau 1, for the input *Hij kan zwemmen* ‘he can swim’, the internal-participant interpretation becomes the optimal one. And, for the input *Hij moet zwemmen* ‘he must swim’ in tableau 2, the optimal interpretation that emerges is the participant-external interpretation.

Another constraint that is argued to play a role in the derivation of the interpretations of the two modal verbs is BODILY ACTIVITY.

BODILY ACTIVITY: Bodily activity verbs such as *plassen* ‘pee’ refer to an activity resulting from an internal (physical) source (= participant-internal).

Foolen and de Hoop argue that the modal verb *moeten* with a third person subject, which previously has a participant-external reading, may shift its interpretation when the main predicate changes. When the main predicate is a kind of bodily activity verb like *plassen* ‘pee’, the participant-external interpretation will shift to the participant-internal interpretation. This is the case since a bodily activity verb like *plassen* ‘pee’ is assumed to be an internal need of the subject. The deviation of this reading is in conflict with the basic meaning of the modal verb. They illustrate the interaction of the two constraints in the following tableau.

Tableau 4. Derivation of the participant-internal reading of *Hij moet plassen*
‘He must pee’

<i>Hij moet plassen</i> he must pee	BODILY ACTIVITY	*MEANING SHIFT
☞ Participant-internal		*
Participant-external	*!	
Epistemic	*!	*

In all three tableaux, the epistemic reading always violates the constraints. To get this reading as the optimal one, Foolen and de Hoop argue that the modal verbs should be followed by a stative verb, referring to a state, such as ‘be at home’ or ‘be ill’ as an example below.

- (9) Hij kan ziek zijn.
he can ill be
“He can be ill.”

They assume that the epistemic interpretation as a result of the combination of the modal verb with such a predicate is because the participant-internal reading and the participant-external reading require some controllability of the situation. Therefore, they propose a constraint CONTROLLABILITY to get an epistemic reading as the optimal one.

CONTROLLABILITY: Participant-internal and participant-external interpretations require some degree of controllability of the situation.

To get an epistemic reading for sentence (9), the constraint CONTROLLABILITY is placed higher than the constraint *MEANING SHIFT. The constraint BODILY ACTIVITY is not used since this sentence does not have any bodily activity verbs. The following tableau illustrates the process of getting the epistemic reading as the optimal one.

Tableau 5. Derivation of the epistemic reading of *Hij kan ziek zijn* ‘He can be ill’

<i>Hij kan ziek zijn</i> he can be ill	CONTROLLABILITY	*MEANING SHIFT
Participant-internal	*!	
Participant-external	*!	*
☞ Epistemic		*

In addition to the lexical predicates, it is argued that shift interpretations of the modal auxiliaries are also due to the grammatical properties of tense and aspect in which the modal verbs are used. One grammatical aspect that is assumed to play a role here is the progressive aspect. Sentences (7) and (8) that we saw at the beginning of this review are argued to have a participant-internal ability and a participant external reading, respectively. However, when the grammatical aspect used in these two sentences is progressive, both interpretations will shift to epistemic readings. Below are sentences with modal auxiliaries and a third person pronoun as the subject marker as well as progressive aspect, provided by Foolen and de Hoop (to appear).

(10) *Hij kan aan het zwemmen zijn.*
 he can at the swimming be
 “He can be swimming.”

(11) *Hij moet aan het zwemmen zijn.*
 he must at the swimming be
 “He must be swimming.”

Progressive aspect of a sentence is argued to have actuality entailment, i.e. it entails the realization of the event in the real world. This is in conflict with the basic meaning of modality. According to Narrog (2005), cited in Foolen and de Hoop (to appear), modality is defined in terms of its factuality: “The expression of a state of affairs

is modalized if it is marked for being undetermined with respect to its factual status (...).” Therefore, there is no such actuality entailment. In addition, modals are argued to invoke possible (accessible) worlds that enable us to talk about non-actual situation. The properties of the modals are captured in a constraint FAITHMODAL (a constraint proposed by van Gerrevink 2008).

FAITHMODAL: A modal verb leads to undetermined factuality status.

The strong actuality entailment of the progressive aspect leads to a tension when combined with a modal verb: the progressive requires the event to actually hold whereas the modal verb requires the actuality of the event to be undetermined. According to Foolen and de Hoop (to appear), this tension is resolved by an epistemic interpretation. Epistemic modality refers to the speaker’s estimation of the likelihood that a certain state of affairs is the case. Hence, the actuality entailment of the progressive is cancelled by the epistemic reading, and FAITHMODAL is satisfied. A situation, in which the proposition turns out to be false in the actual world, is possible under an epistemic reading, whereas this is infelicitous for a progressive without the modal. The examples given are the following.

- (12) Hij is aan het zwemmen. [#Maar hij is niet aan het zwemmen.]
He is at the swimming
“He is swimming.” [#But actually, he is not swimming.]
- (13) Hij kan aan het zwemmen zijn. [Maar hij is niet aan het zwemmen.]
he can at the swimming be
“He can be swimming.” [But actually, he is not swimming.]
- (14) Hij moet aan het zwemmen zijn. [Maar hij is niet aan het zwemmen.]
he must at the swimming be
“He must be swimming.” [But actually, he is not swimming.]

As pointed out by Foolen and de Hoop, the parts between brackets are not meant as continuations of the propositions. The sentences in the brackets do not mean that a speaker first states that the subject is swimming, but then in the same breath states that he is not. The parts between brackets refer to situations which serve to verify whether a sentence has actuality entailment or not. Since modal auxiliaries such as *kunnen* ‘can’ and *moeten* ‘must’ always express a degree of uncertainty with respect to the factuality of its complement, sentences (13) and (14) can both be used in a situation in which the subject is actually not swimming, but (12) cannot. One way in which the modal can satisfy FAITHMODAL is by an epistemic reading. The optimization process to get the epistemic reading as the optimal candidate for the examples in (13) and (14) is illustrated in the following tableaux.

Tableau 6. Derivation of the epistemic modal reading of *kunnen* ‘can’ + progressive

<i>Hij kan aan het zwemmen zijn</i> he can be swimming	FAITHMODAL	*MEANING SHIFT
Participant-internal	*!	
Participant-external	*!	*
☞ Epistemic		*

Tableau 7. Derivation of the epistemic modal reading of *moeten* ‘must’ + progressive

<i>Hij moet aan het zwemmen zijn</i> he must be swimming	FAITHMODAL	*MEANING SHIFT
Participant-internal	*!	*
Participant-external	*!	
i Epistemic		*

The last thing which is argued to have influence on the shift of interpretations of sentences with modal verbs is subject persons. A participant-external reading commonly does not emerge when a sentence with a modal verb has a third person pronoun as the subject. However, when the subject person in the sentence is a second person pronoun, the interpretation that arises is argued to be a participant-external reading (directive reading). The use of a second person pronoun shifts both an epistemic reading and a participant-internal reading directly to a directive reading even though the main predicate used is a bodily activity verb like *cough*. The directive meaning means that the speaker uses his utterance to direct the addressee to do what he says. This is captured by a constraint 2-DIRECTION.

2-DIRECTION: The second person pronoun triggers a directive interpretation.

The derivations of the participant-external reading of sentences with a modal verb and a second person pronoun are illustrated in the following tableaux.

Tableau 8. Derivation of the directive reading of *You might try to put the key into this slot*

<i>You might try to put the key into this slot</i>	2-DIRECTION	*MEANING SHIFT
Participant-internal	*!	*
☞ Participant-external		*
Epistemic	*!	

Tableau 9. Derivation of the participant-external reading of *Je moet hoesten* ‘You should cough’.

<i>Je moet hoesten</i> you should cough	2-DIRECTION	BODILY ACTIVITY	*MEANING SHIFT
Participant-internal	*!		*
☞ Participant-external		*	
Epistemic	*!	*	*

2.3 Conclusion

In this chapter, I have discussed an approach in formal semantics in evaluating different interpretations of ambiguous items i.e. Optimality Theory (OT). I have also presented two articles that deal with the evaluation process of interpretations of polysemic items using this framework. The articles reported here have shown us how the best interpretations of ambiguous items are selected by using a formal semantic approach i.e. Optimality Theoretic semantics. The process of optimization is conducted by using conflicting constraints. It is clear that a constraint does not apply for all meanings of an ambiguous item. The ranking is the same but in varying contexts, different interpretations can become optimal. In the following chapters, I will show how two ambiguous items in Jambi Malay are described and how each interpretation of these two ambiguous items are resolved using conflicting constraints in an OT semantics approach.

3. The Analysis of the Bare Verb *Raso*

3.1 The Interpretations of the Bare Verb *Raso*

In Jambi Malay *raso* has two functions: it can be a noun or a verb. As a noun, *raso* means ‘taste’. As a verb, it has several interpretations i.e. ‘feel’ (experiencer-like), ‘think’ (epistemic), and ‘examine’ (also ‘taste’ and ‘touch’). I would like to claim that the basic meaning of the bare verb *raso* is ‘feel’ (experiencer-like). This is the case since the interpretation of the bare verb *raso* with some affixes i.e. *pa-* and *-an* (*parasoan*), which makes it function as a noun, gives rise to a ‘feeling’ interpretation. It can have a ‘thinking’ interpretation, used to convey an assumption (an epistemic interpretation) but the the assumption is also based on the speaker’s feeling, or an ‘examining’ interpretation. It also cannot be ‘taste’. My focus in this analysis is only on *raso* as a bare verb.

Raso meaning ‘feel’ is categorized as a mental verb. In English, this meaning is used to convey something that is experienced by the speaker. This verb takes the perceiver as the subject (Beth, 1993: 185-186). Since in English ‘feel’ has multiple interpretations, in this paper, ‘feel’ in all sentences will refer to the experiencer-like interpretation. Below I will describe how the bare verb *raso* shifts its interpretation and try to analyze it in OT Semantics.

In a conversation, it is common for a speaker to not use a person marker to refer to himself. The referent can be resolved by using gestures or the local context; both the speaker and the hearer are present so it is not difficult to determine whether the speaker refers to himself or to the addressee (interlocutor). In declarative sentences, the subject of the utterance is the speaker (first person), for example, when answering a question ‘where are you going?’ the addressee may just answer ‘to school’ instead of saying ‘I am going to school’. In Jambi Malay, the absence of the first personal marker is also not uncommon, especially when the verb used in the sentence is a mental verb like *raso*. Generally speaking, when the speaker is talking about himself, with no further context, it is easy for an addressee to understand who the speaker refers to when he uses the bare verb *raso* with no subject markers. Consider the sentences below.

(15) Lapar raso prUt
hungry feel stomach
“I feel hungry.”

(16) Naq kluar ruma, brat raso kaki
want go.out house heavy feel leg
“I feel too lazy to go out.” (lit. "I want to go out, but my legs feel heavy.")

(17) Ko raso pacUl
this feel broken
“I feel this is so painful.” (lit. “I feel as if it is broken.”)

The sentences (15-17) do not have a person marker. However, it is not difficult for the addressee to recognize to whom the speaker refers. Generally, it is impossible for the speaker to say something about what the addressee feels, therefore in such constructions the experiencer of that feeling is straightforwardly understood as being the speaker (first person). Syntactically, the bare verb *raso* meaning ‘feel’ requires an adjective as its complement.

Sentence (15) is used by a speaker when he wants to convey the meaning that he is experiencing hunger. Sentence (16) means that there is something the matter with the speaker that makes him have no desire to get out of his house. It might be because there is something wrong with his body (physical problems) or because of non-physical problems (psychological problems). In sentence (17), the speaker wants to convey a meaning that he is experiencing a problem in his body. That sentence indicates that the subject is suffering from a disease. He can control the treatment, for example by taking some pills, but cannot control the pain since the pills cannot guarantee that the pain will go away as soon as he wants.

Meanwhile, when the subject of the sentence is explicitly mentioned the interpretation of the bare verb *raso* does not remain as the experiencer-like interpretation anymore. In Jambi Malay, the presence of a first person pronoun with the bare verb *raso*

gives rise to an epistemic interpretation. When the first person pronoun is used in the sentence, the verb *raso* is more agentive. The presence of the first person pronoun as the subject marker makes the feeling more conscious: the subject acts as an agent in the sentence. The speaker asserts his judgment on the truth value of the proposition based on his belief/feeling (epistemic). What he assumes can be right or not. It is his feeling that says something is the case and it is then uttered consciously by the speaker to convey the possibility of something using the bare verb *raso*. Beth (1993) states that some mental verbs function as verbs of modality and I believe that one of the verbs for which this holds is the bare verb *raso*. See the following examples:

(18) Aku raso palIng aman dioq di jaMi
 1stSg feel most safe 3rdSg LOC Jambi
 “I think the safest place for him is Jambi.”

(19) Aku raso Reza tu
 1stSg feel Reza that
 “I think that is Reza.”

(20) Aku raso mahal
 1stSg feel expensive
 “I think it is expensive.”

The use of a different subject person in the sentences may also shift the interpretation of the verb *raso*. When a second person pronoun is used, the interpretation cannot be epistemic anymore unless we use it in an interrogative sentence. This might be the case since the speaker cannot clearly say something about what the addressee is assuming. And, culturally, it is considered inappropriate for someone to assume that he knows the thoughts of others (cf. de Reuse 2003). The interpretation then changes to a concrete meaning since it is used in an imperative sentence and there is something concrete that can be seen/observed (an object) by the speaker. Consider the example below.

(21) Kau raso reza tu
 2ndSg feel Reza that
 “Please examine Reza.”

In sentence (21), the verb *raso* can have neither an experiencer-like nor an epistemic interpretation. Only the ‘examine’ interpretation is accepted. The presence of the second person pronoun here leads to a directive interpretation. A directive interpretation means that the speaker suggests the addressee to do something (Foolen and de Hoop, to appear: 15). In other words, the speaker directs the addressee to do what he says. As already mentioned above a speaker cannot say something about what the addressee feels and, generally speaking, it is impossible to feel ‘someone’. In addition, it is only the perceiver who can say what he feels and it is only the speaker that knows what is on his mind when uttering a possibility that something is the case.

In sentence (21), the speaker asks the addressee to use a part of his body (e.g. hand) to find out whether the object, in this case Reza, is suffering from fever. The speaker may have a feeling that there is something wrong with Reza. Then, the addressee is directed to examine the part of Reza’s body (commonly the forehead) to make a judgment about the condition of Reza. This judgment might be used to confirm what the speaker has already assumed. So, there might be a relation between what the speaker already has in his mind (the assumption that Reza is sick) to what he asks to the addressee and the result of examining done by the addressee. Below we see how the verb *raso* extends its meaning.

Raso = ‘feel’ (experiencer-like) → ‘think’ (epistemic) → ‘examine’ (controllable)

A ‘feel’ (experiencer-like) interpretation and a ‘think’ (epistemic) interpretation refer to the speaker, while an ‘examine’ (controllable) interpretation can refer to both the speaker and the addressee. The speaker can control his utterance because he is willing to direct someone to do something and the addressee can control whether he likes to do what has

been said by the speaker or not. Besides, he also can limit the act of the examination as he sees fit.

In addition to the use of pronouns, a different complement or construction of the sentence can also shift the interpretation of the basic meaning of the bare verb *raso*. The interpretation can shift from an abstract interpretation to a semi-abstract interpretation and then to a concrete interpretation. In this case, the meanings are ‘feel’, ‘think’ and ‘examine’. The bare verb *raso* with a concrete object will give rise to a concrete interpretation i.e. ‘examine’, ‘taste’, or ‘touch’. Even though there are three interpretations that arise from the combination of the bare verb *raso* with a concrete object, I believe that the main interpretation that is assigned to this verb is ‘examine’. When the object is a kind of food the interpretation of the bare verb *raso* is ‘taste’. See the following example.

- (22) Raso kue ko dulu!
feel cake this before
“Taste this cake first!”

In sentence (22), the speaker meant to ask the addressee to taste the cake. He does not merely ask the addressee to eat the cake but rather to examine the taste of the cake to determine whether it is nice or not. This is also the case with the meaning ‘touch’, as illustrated below:

- (23) Te tu masI panas, cubo raso cangkIr tu!
tea that still hot try feel cup that
“The tea is still hot, just touch the cup!” (The tea is still hot; just touch the cup if you want to make sure whether it is really hot or not/ if you don’t believe me.)

Sentence (23) is commonly used when a speaker wants to convey that what he already said is correct. In sentence (23), the object is a concrete thing i.e. ‘cup’. This sentence tells you that the speaker meant to ask the addressee to touch the cup. As was

already discussed for sentence (22), the speaker who utters the sentence (23) also does not merely ask the addressee to touch the cup but rather to ask him to examine how the addressee feels when touching the cup. The speaker directs the addressee to do that to confirm that a proposition he uttered is right.

In Foolen and de Hoop (to appear), the combination of a modal verb with another lexical predicate is argued to give rise to another interpretation of the modal. This is also the case with the verb *raso*. A different interpretation of another lexical predicate combined with the verb *raso* may also emerge and makes it possible to have a directive meaning even if the pronoun is omitted. This is because it is very common for a speaker to tell the addressee to do something directly. One of the additional predicates which can be combined with the bare verb *raso* is *cubo* ‘try’. *Cubo* ‘try’ is a verb that commonly needs an agentive subject. The null subject in the sentence remains to indicate that the verb has an agent since *cubo* is also one of the imperative markers used in Jambi Malay. See the following example.

- (24) *Cubo dngar akuko!*
 try listen 1stSg-KO
 “Please listen to me!”

When there is no other lexical verb like *cubo* as the additional predicate and the complement is an adjective, no person marker in sentences containing *raso* as the predicate can give rise to an experiencer-like meaning. It is also not so clear whether the subject-experiencer is the speaker or another referent (third person) unless we know the context. However, usually without looking at a further context, the subject-experiencer refers to the first person (the speaker). With the additional imperative marker *cubo*, the verb *raso* commonly has observable/controllable action interpretations (‘examine’, ‘taste’, or ‘touch’). These interpretations mean that the speaker is able to observe / see whether the addressee does what he already said. Therefore, even with a null subject, the meaning will shift from ‘feel’ to ‘examine’, ‘touch’ or ‘taste’ depending on the object (actually it also has meaning ‘touch’ but this interpretation really means ‘touch to examine’). As already discussed previously, *cubo* ‘try’ needs an agentive subject. In an

imperative construction the null subject is interpreted as an agent (addressee) just like in English. I recall sentence (23) to illustrate this.

- (25) Te tu masI panas, cubo raso cangkIr tu!
tea that still hot try feel cup that
“The tea is still hot, just touch the cup!”(The tea is still hot; just touch the cup if you want to make sure whether it is really hot or not).

3.2 The Optimization Process of Interpretations of the Bare Verb *Raso* in OT Semantics

After analyzing the possible interpretations of the verb *raso*, I would like to present the optimization process of its interpretations in OT semantics. Since I have discussed this theory in chapter 2, I will now go right to the evaluation process of the three possible interpretations of the bare verb *raso* to get the optimal candidate for different input forms.

From the above discussion I would like to use three constraints to get the optimal interpretation for each form. Since the basic meaning of the bare verb *raso* is ‘feel’, I will use the constraint *MEANING SHIFT. This constraint is proposed by Foolen and de Hoop (to appear) to get an optimal interpretation of modal verbs in Dutch. This constraint says “do not shift the basic meaning”. In this case, this means that the bare verb *raso* in all sentences must be interpreted as ‘feel’ (experiencer-like). In other words, if the interpretation shifts to ‘think’ (epistemic interpretation) or ‘examine’ this will be considered a violation of the constraint. However, a violation made by the ‘examine’ interpretation will be considered worse than the ‘think’ (epistemic) interpretation since the ‘think’(epistemic) interpretation is still considered to be more common in meaning to ‘feel’ while ‘examine’ has gone further away from the meaning ‘feel’. Hence, shifting the interpretation from ‘feel’ to ‘think’ is considered one violation, while shifting the interpretation from ‘feel’ to ‘examine’ will be considered two violations.

*MEANING SHIFT: do not shift the basic meaning

Other constraints I will use to get the optimal interpretation of each form are FIT and IMPERATIVE. FIT is a basic constraint to get an optimal interpretation of a form within a certain context. The constraint FIT says “interpretations should fit to the linguistic context” (Zwarts 2004). Finally, IMPERATIVE is a constraint that says that the subject of an imperative sentence must be an agent. Since *raso* may take a subject as an agent (‘examine’, ‘taste’, and ‘touch’), an experiencer/agent (‘think’), and an experiencer (‘feel’), not all candidates satisfy the constraint IMPERATIVE. A candidate meaning will satisfy this constraint only if the subject is an agent. If the subject is an experiencer/agent, or an experiencer, it will be considered a violation of the constraint. However, a violation made by an interpretation that has an experiencer subject will be considered worse than an interpretation that has an experiencer/agent subject. This is the case since an experiencer/agent subject has some properties of an experiencer and some properties of an agent. It still has a control of the situation just like an agent subject while an experiencer subject cannot have control of the situation at all.

FIT: interpretations should not conflict with the linguistic context.

IMPERATIVE: an imperative takes an agent as the subject.

Having determined the set of possible interpretations of the bare verb *raso* and the constraints that will be used to decide among candidates (to get the optimal one), now we see how the optimal interpretation is derived from the constraints. I will use all constraints proposed above to determine the optimal candidate. In some tableaux, certain constraints may not play a role. The presence of all constraints in the tableaux will make clearer how the evaluation process works.

To get the optimal interpretation of all input sentences, I will assume the following ranking of the constraints:

FIT » IMPERATIVE » *MEANING SHIFT

FIT is considered the highest constraint. *MEANING SHIFT is lower than IMPERATIVE. In tableau 10, we see how the evaluation process for getting the optimal candidate works.

Tableau 10. Optimal interpretation for a form with the bare verb *raso* with no person marker and an abstract complement.

Lapar raso prUt hungry feel stomach	FIT	IMPERATIVE	*MEANING SHIFT
☞ I feel hungry			
I think I am hungry			*!
I examine that I am hungry			*!*
You feel hungry	*!		
You think you are hungry	*!		*
You examine that you are hungry	*!		**
He feels hungry	*!		
He thinks he is hungry	*!		*
He examines that he is hungry	*!		**

In tableau 10 we have all the constraints. However, we see that not all constraints are active. For a given input in this tableau, we can only use FIT and *MEANING SHIFT to get the optimal interpretation. As already stated previously, the presence of the other constraint is only to make the evaluation process for all candidate outputs from all given inputs of the bare verb *raso* clear. IMPERATIVE is not active at all because the input does not have an imperative marker.

The input form in the tableau 10 does not have an explicit subject marker and the complement is an adjective i.e. ‘hungry’. With that construction, the interpretation can refer to all persons (first person, second person, and third person). However, not all candidate meanings can be accepted. From all nine candidate interpretations, only three candidates satisfy constraint FIT i.e. ‘I feel hungry’, ‘I think I am hungry’, ‘I examine that

I am hungry’. With no further context, the perceiver implied in a form with the verb *raso* with no subject marker and with an adjective as the complement is the speaker. However, only the ‘I feel hungry’ interpretation is optimal. The other two candidates cannot be optimal because each of them violates the constraint *MEANING SHIFT. So, in that tableau, the constraint *MEANING SHIFT penalizes these two candidates.

In tableau 11, we will have a different input form. The subject is a first person pronoun. In the following tableau we see how these constraints are in conflict as well as how the optimal interpretation is found.

Tableau 11. Shift interpretation of the bare verb *raso* with a first person marker.

Aku raso reza tu 1 st SG feel R that	FIT	IMPERATIVE	*MEANING SHIFT
I feel Reza	*!		
☞ I think that is Reza			*
I examine Reza			**!

From the three output meanings, the ‘think’ (epistemic) interpretation and the ‘examine’ interpretation both satisfy the constraint FIT. The ‘feel’ interpretation violates the constraints FIT since someone cannot ‘feel’ (experience-like) an object. Since it violates the highest ranked constraint, it is then out of the race. The other two candidates violate the constraint *MEANING SHIFT. However, the violation made by the ‘think’ interpretation is not fatal. It only violates the constraint once so finally we get this output as the optimal interpretation. Again, we do not activate the constraint IMPERATIVE since the given input form does not have an imperative marker.

In tableau 12, the input form uses a second person pronoun as the subject. Thus, we will also have a different optimal candidate from the previous ones. In the following tableau we see how these constraints are in conflict as well as how the optimal interpretation is found.

Tableau 12. Shift interpretation of the bare verb *raso* with a second person marker.

Kau raso reza tu 2 nd Sg feel R that	FIT	IMPERATIVE	*MEANING SHIFT
Feel Reza!	*!		
You think that it's Reza	*!		*
☞ Examine Reza!			**

In tableau 12, IMPERATIVE is not activated since the input form does not have an imperative marker. From the three output meanings, the ‘feel’ interpretation violates the highest constraint i.e. FIT. This is the case since it is impossible for a subject to feel (experience-like) an object. As already mentioned in the previous discussion, the ‘feel’ (experiencer-like) interpretation requires an adjective as the complement. So, it is pragmatically odd if a speaker asks an addressee to experience an object. By violating the highest constraints it is then no longer an option. The ‘think’ (epistemic) interpretation violates all constraints. With a normal intonation, the bare verb *raso* with a second person pronoun as the subject cannot give rise to the ‘think’ (epistemic) interpretation since it is pragmatically odd that a speaker utters what is on the addressee’s mind. In this sense, it violates FIT. A second person subject with the bare verb *raso* in a sentence in Jambi Malay gives rise to a directive meaning (imperative). However, an epistemic reading cannot be obtained through imperative. We cannot have ‘think that it is Reza!’ or ‘think of Reza’ for that form since this interpretation does not represent an epistemic meaning of *raso*. The ‘think that it is Reza!’ interpretation implies that the speaker asks the addressee to make an estimation/ a likelihood about something, in this case asking to make an assumption that something (e.g. a body or a statue) is Reza. The ‘think of Reza’ interpretation also implies that the speaker asks the addressee to do something i.e. to think of Reza. From the three candidate meanings, only the ‘examine’ interpretation violates the lowest constraint. Therefore we get this candidate as the optimal interpretation.

As already mentioned in the previous section, with an additional imperative marker *cubo* and a concrete object, the bare verb *raso* commonly shifts its interpretation from the ‘feel’ to the ‘examine’ meaning and also from the ‘think’ to the ‘examine’ interpretation no matter which subject is used in the sentence (even with no subject markers) since an imperative marker itself triggers a second person pronoun as the subject (Davies 1986). The interpretation goes directly from an abstract/semi-abstract interpretation to a concrete interpretation. For input forms with an imperative marker, I will also use the same constraints as the previous ones.

Tableau 13. Shift interpretation for an input sentence with the bare verb *raso* and an imperative marker *cubo*.

Cubo raso kue ko try feel cake this	FIT	IMPERATIVE	*MEANING SHIFT
Please feel this cake!	*!	**	
You think that this is a cake	*!	*	*
☞ Please taste this cake!			**

In tableau 13, the first candidate violates the highest constraint. As discussed before, someone cannot feel (experience-like) an object. Therefore the speaker cannot ask someone to experience a cake. In this sense, it does violate FIT. It also violates IMPERATIVE because the subject is not an agent but an experiencer. The second candidate violates FIT, IMPERATIVE, and *MEANING SHIFT. Thus, it cannot be optimal. From the three candidate outputs, only the ‘Please taste this cake!’ interpretation satisfies the highest constraints. Therefore, we get this candidate as the optimal one. The output meaning we get is not directing to ‘examine’ because the object is a kind of food. However, what is meant in that input sentence is the addressee is asked to taste the cake to examine the taste of the cake and say whether it is nice or not. So, it is not merely to ask the addressee to eat the cake.

Now we consider what happens if the first person marker is used with the bare verb *raso* and the imperative marker *cubo* as well as a concrete object.

Tableau 14. Shift interpretation for an input sentence with a first person marker, the bare verb *raso* and the imperative marker *cubo*.

Cubo aku raso kue ko try 1 st Sg feel cake this	FIT	IMPERATIVE	*MEANING SHIFT
Let me feel this cake	*!	**	
I think this is a cake		*!	*
i Let me taste this cake			**

From tableau 14, we see that the first candidate in this tableau violates and satisfies the constraints in the same manner as did the the first candidate in tableau 13. The second candidate satisfies FIT but violates IMPERATIVE. This candidate meaning violates IMPERATIVE since the subject is not truly an agent. The subject in this interpretation is an experiencer/agent. The subject has properties of an experiencer and an agent. In the ‘think’ (epistemic) interpretation, the subject has a control of a situation but the situation is still based on the internal reality. In this sense, it still has a relation to an experiencer-like interpretation. The third candidate only violates the lowest ranked constraint. Hence, we get this output as the optimal interpretation. From this tableau we see that with the first person marker in the input sentence we also get ‘taste’ (taste to examine) as the optimal interpretation. ‘Taste to examine’ is found to be the optimal interpretation since the object is a kind of food. We can have ‘touch to examine’ in this form if we change the object to other than food such as clothes, cups, etc and ‘examine’ if the object is a part of body. So, it seems that the bare verb *raso* with the imperative marker *cubo* and an object always give rise to an ‘examine’ interpretation no matter which person markers are used in the sentence. This might be the case since an imperative always takes an agent as the subject.

3.3. Conclusion

In this chapter, we have seen that a variety of contrasts in interpretations may arise among sentences with the bare verb *raso*. The shift of the interpretations relates to some aspects namely the use of the person markers as the subject, the constructions and complements of the sentences, and the additional lexical predicate attached to the bare verb *raso*. In this study I limited the analysis to an imperative marker *cubo* as the additional lexical verb. I showed that the optimal interpretation of different forms is obtained through the interaction of conflicting constraints in OT Semantics.

4. The Analysis of the Bare Verb *Kato*

4.1 The Interpretations of the Bare Verb *Kato*

In Jambi Malay *kato* has two functions: it can be a noun or a verb. As a noun *kato* means ‘word’. As a verb, the default meaning of *kato* is ‘say’. As with the verb *raso*, *kato* in Jambi Malay can also be inflected with certain affixes. It can also be reduplicated. My focus in this analysis is only on the functions of *kato* as a bare verb. The bare verb *kato* ‘say’ is a kind of speech act verb. It is commonly used in reported speech (direct and indirect speech). Direct speech is usually found in conversations in books, plays, and quotations, while indirect speech is normally used in colloquial conversations. For my limited purpose, in this analysis I will not consider the use of the bare verb *kato* in direct speech.

Kato (meaning ‘say’) is usually used to describe world knowledge. For a speaker, it is rather odd if he uses the word ‘say’ when he wants to convey new information. It is more natural when a speaker wants to convey new information about what he knows to say it without explicitly saying that he is saying it. When someone knows something from his own knowledge, for example, that the land is fertile, he will directly say ‘this land is fertile’ without need to say ‘I say this land is fertile’. So, it is pragmatically odd if the lexical predicate *kato* meaning ‘say’ is combined with the first person pronoun when it is used to convey new information. To have a factual information reading, *kato* is coupled with a third person pronoun. It is commonly used in reported speech. Consider the following example.

(26) *kato* *dioq* *baju* *tu* *eloq*
 say 3rdSg garment that beautiful

“She said that the dress was beautiful.”

In sentence (26), the speaker tells the addressee that someone has told him that the dress is beautiful. He might want to give information that someone has given a judgment about that dress or it might be used to convince the addressee that the dress he will buy is

beautiful since someone else has given a positive opinion on that dress. So, ‘say’ with a third person marker is factual.

The use of a third person marker in a sentence with *kato* indicates a source of information delivered by the speaker to the addressee. In Mushin (2001: 130) this is called “evidential indirect speech”. Bybee (1985: 184) defines evidentials as “markers that indicate something about the source of information.” According to Aikhenvald (2004), the use of the term “evidentials” is restricted to grammatical categories. The grammatical markers are considered obligatory to refer to evidentiality. Therefore, she refers to evidentiality as a source of information which is marked by a grammatical category. Her point of view is based on studies on evidentiality which show that many languages, particularly non-European languages, have special affixes, clitics and particles that mark evidentiality. She argues that the use of lexical expressions like indirect speech in English is only considered “evidentiality strategies”. Evidentiality strategies are categories which can acquire a secondary usage that has something to do with reference to an information source. The categories can involve non-indicative mood and modalities, past and perfect tenses, passives, complementation strategies, nominalization, person marking, and reported speech. A grammatical technique is an evidentiality strategy if, in addition to its primary meaning, it can acquire one or more semantic feature characteristics of evidentiality proper. Finally, an evidentiality strategy would cover every linguistic expression with a potential interpretation as having to do with truth, commitment, or the speaker’s authority. However, Cornillie (2007) has a different point of view on this. According to her, evidentiality may be accounted for by both grammatical and lexical aspects. She also argues that, based on grammaticalization and other studies, the border between the two is not clear. Cornillie’s point of view is in line with Mithun’s (1986) as discussed in Ifantidou’s (2001: 3). Mithun (1986) defines evidentials as “markers (which) qualify the reliability of information communicated in four primary ways. They specify the source of evidence on which statements are based, their degree of precision, their probability, and expectations concerning their probability.” Therefore the combination of a third person subject with ‘say’ can be included in what Mithun calls “lexical evidential markers.”

In Jambi Malay the combination of the lexical predicate *kato* with second person pronouns is common. However, the interpretation that emerges cannot be factual information anymore. Generally speaking, a speaker cannot tell the addressee what the addressee has said to the addressee if it is intended to give new information. For example, A says “the dress is beautiful”. B trusted what A said. Then, B bought the dress. However, when he checked it out at home, he found that the dress was not good. Then, B says this sentence to A “you said the dress was beautiful”. When B says this, he does not mean merely to inform A that A has said that the dress is beautiful. He said this to remind A that A has said something good about the dress, while in the reality it is not. In Jambi Malay, this sentence implicates that the speaker wants to know why the reality is not the same as what A said. The use of the second person with the verb ‘say’ must have something more than what is stated explicitly by the speaker. I would claim that the combination of the lexical predicate *kato* with second person pronouns gives rise to a *counterfactual implicature interpretation*.

The term *implicature* is introduced by Grice as a technical term denoting “the act of meaning or implying something by saying something else.” An implicature refers to a proposition that is implied by the utterance of a sentence even though the proposition is not a part of nor an entailment of what was actually said (cf. Davis 1998; Gazdar 1979). As discussed by Rohbough (1997: 42), the concept of implicature was introduced by Grice by means of an example.

“suppose that A and B are talking about a mutual friend, who is now working in a bank. A asks B how C is getting on in his job, and B replies, *Oh quite well, I think; he likes his colleagues, and he hasn't been to prison yet*. At this point, A might well inquire what B has implying, what he was suggesting, or even what he meant by saying that C had not yet been to prison. The answer might be any one of such things as that C is the sort of person likely to yield to the temptation provided by his occupation, that C's colleagues are really very unpleasant and treacherous people, and so forth. It might, of course be quite unnecessary for A to make such an inquiry of B, the answer to it

being, in the context, clear in advance. It is clear that whatever B implied, suggested, meant in this example, is distinct from what B said, which was simply that C had not been to prison yet.”

The use of the verb *implicate*, along with the nouns *implicature* (the act of implicating) and the *implicatum* (that which is implicated) by Grice is intended to avoid the constant juggling between the terms *imply*, *suggest*, *mean*, etc.

The use of *kato* and the second person pronoun implicates that the speaker needs more explanation about what is going on; why the reality is not the same as what the addressee has already said. I will illustrate this with the following example.

(27) Kato kau baju tu eloq
 say 2ndSg garment that beautiful

“You told me that the dress was beautiful.”

Sentence (27) tells you that the addressee told the speaker that the dress is beautiful. However, the reality is that it is actually the other way around; the dress is not beautiful. When the speaker says this sentence, it implicates that he wants to know why the addressee said that dress was beautiful, while in fact it is not. This kind of sentence can be used as an indirect question i.e. ‘why did you say that dress was beautiful?’ or ‘why is the dress not as beautiful as you said?’.

In the same way as a second person pronoun, a first person pronoun also cannot be used to convey new information when it is paired with the bare verb *kato*. When *kato* is combined with a first person pronoun, the interpretation encompasses more. Since it has been stated that it is not normal for a speaker to say new information (a factual thing) by using the word ‘say’, the existence of first person pronouns shift the interpretation of the verb *kato* from giving a factual information interpretation to another interpretation i.e. a counterfactual interpretation. It means that what is happening in the reality is not the same as what the speaker already believed (said in his mind). The interpretation that emerges from the combination of the verb *kato* with a first person pronoun in Jambi Malay is a *counterfactual assumption interpretation*. I call it a counterfactual assumption

interpretation because the interpretation shows that what is happening in the reality is different from what has been assumed by the speaker. The speaker uses *kato* with a first person marker when he realizes that the reality is not the same as what he had assumed. Consider the following example.

- (28) kato aku kmeja tu eloq
 say 1stSg shirt that beautiful
 ‘I thought the shirt was good.’

In sentence (28), the speaker thought that the shirt was good but in fact it is not. He says this when he finds out that the actual world is not the same as what he assumed. If he already bought that shirt, the sentence might implicate that he regrets having bought it. However, he cannot blame anyone since it was his own choice. The sentence tells us that he used his own belief as a guidance to buy the shirt. In this sense, I would also like to claim that the interpretation that emerges from the combination of a first person pronoun with the bare verb *kato* can be a *counterfactual assumption* as well as an *implicature interpretation*.

The discussion above may show what has been argued by Ninomiya (1986) as discussed in Shinzato (2004). Ninomiya argued that the same Chinese character *kanji* 謂 is used for both ‘think’ and ‘say’ in classical Chinese texts. The change of its interpretation also deals with the use of pronouns in sentences. The meaning ‘think’ (epistemic) in the sentence is obtained when the first person marker is used, while the meaning ‘say’ arises when the person marker used is the third person. The example given is as follows.

- (29) 予謂菊華之隱逸者也 (『愛蓮說』)
 ware omoheraku kiku ha hana no
 I think chrysanthemum TOP flowers of
 initsu mono nari. (*Ariensetsu*)
 hidden treasures thing be
 ‘I think that chrysanthemums are the hidden treasures among flowers.’
 (Loving Lotus Story)

In example (29), the Chinese word 謂 is read as *omoheraku* ‘I think’. Ninomiya states that if we change the subject of (29) to the third person (‘he’ rather than ‘I’), then the same *kanji* 謂 should be read as *itheraku* ‘he says’ rather than *omoheraku* ‘he thinks’. Another language that he argues depicts the same phenomenon as the Chinese word 謂 is the French verb *trouver* ‘find’, which may mean both ‘think’ (epistemic) and ‘say’ (giving information) as the example below shows.

(30) Louis me trouve vicieux, je me trouve pire.

‘Louis says/thinks that I am vicious, (but) I think/*say I am worse than that.’

(Shinzato, 2004)

In addition, as pointed out by Shinzato (2004), an English colloquial expression, ‘be like’, which is very popular among the current younger generation in the USA, might be yet another example. According to Shinzato, the speaker of the following utterance (a 14 year old female) states that the expression ‘was like’ with ‘I’ is a possible equivalent of ‘I thought’, while the same phrase with ‘he’ means ‘he said’, as in an example below:

(31) ‘He was like, “She shouldn’t take it out on Becky.” I was like, “She was just upset. That’s all.” But I didn’t say it to him because. . .’

(Shinzato, 2004)

Following what has been discussed in Shinzato (2004), it seems that the Jambi Malay, Chinese, French, and English uses suggest a similar tendency in distinguishing the same lexeme (*kato*, 謂 *trouver*, *be like*) between the two meanings, ‘think’ (epistemic) and ‘say’ (information). The choice of one reading over the other seems to have to do with co-occurring subjects: with first person subjects, the reading is ‘think’ (epistemic), while with third person subjects, it is ‘say’ (information). The difference might only be in one interpretation. *Kato* with an epistemic reading, in this case the epistemic reading as a result of the combination of the bare verb *kato* and a first person marker, focuses on the epistemic interpretation in which the speaker has realized that

there is no more truth value in his previous proposition (containing what the speaker believed). On the other hand, with the Chinese verb *kanji*, *trouve* in French, and *be like* in English, it seems that it still has a truth value in the present or future context. In other words, in Jambi Malay, the use of a first person pronoun with the bare verb *kato* indicates that what has been assumed turns out to be false. Hence, it can be said that the bare verb *kato* with a first person marker will give rise to a counterfactual assumption.

Moreover, as also discussed in Shinzato (2004), such a distributional tendency seems to be in effect even when ‘think’ and ‘say’ are lexicalized as two separate entities. She refers to Ninomiya’s (1986) statistical analysis of Japanese dialogue as one of the examples. The analysis shows that the verb ‘think’ co-occurs predominantly with first person subjects, while the verb ‘say’ tends to co-occur with third person subjects. Out of 25 occurrences of ‘think’ in his data, 23 have a first person subject. Similarly, a majority of the 48 instances of ‘say’ are coupled with the third person subject. In addition, according to de Reuse (2003: 94) the verb ‘think’ in Western Apache is hardly ever used with non-first person and it is simply because it is considered “culturally inappropriate to presume to know the thoughts of others.”

Finally, since *kato* (say) can be categorized as one of lexical evidentials, we can then refer to what has been pointed out by Curnow (2002). As he summarized in his article, “evidentials indicating that a speaker inferred, did not witness, or was told about an event or state, and similar notions, are relatively common in third-person-only sentences but extremely rare in first person subject sentences”.

4.2 The Optimization Process of Interpretations of the Bare Verb *Kato* in OT Semantics

After analyzing the possible interpretations of the bare verb *kato*, I would like to present the optimization process of interpreting the bare verb *kato* for different inputs in OT semantics. As indicated in the previous section, generally speaking, the bare verb *kato* has three interpretations i.e. giving information (fact), counterfactual assumption, and counterfactual implicature. One factor that influences the choice for one of the interpretations is the person marker. From the above discussion I would like to use two

constraints to get the optimal interpretation for each form. ‘Say’ is commonly used to convey information. We have seen that the interpretation of ‘say’ as a verb to convey information in most languages commonly must be paired with a third person marker. The third person subject is used as the source of the information. To sum up, we can say that the basic meaning of *kato* is giving information. By considering the principle of the verb ‘say’, I will use the constraint *MEANING SHIFT. In this case, this means that the bare verb *kato* in all sentences must be interpreted as giving information (factual). Since the bare verb *kato* also has some other interpretations i.e. a counterfactual assumption and a counterfactual implicature, this constraint cannot stand alone. The other two interpretations obviously will violate this constraint. To get the optimal candidate from all possible outputs for a different input, FIT will be paired with *MEANING SHIFT. For the given inputs, I will assume the rank of the constraints as follow.

FIT » *MEANING SHIFT

Having determined the set of possible interpretations of the bare verb *kato* and constraints we can use to decide the best interpretation for a given input form, now we see how the optimal interpretation is derived from the constraints. The evaluation process for all candidate meanings will be illustrated in the following tableaux.

Tableau 15. Optimization process for the interpretation of the bare verb *kato* with a third person marker.

Kato dioq baju tu eloq say 3 rd Sg garment that beautiful	FIT	*MEANING SHIFT
Counterfactual assumption		*!
Counterfactual implicature		*!
☞ Factual information		

In Tableau 15, all candidates satisfy the constraint FIT. A factual information satisfies FIT since it is natural for a speaker to convey information obtained from someone else by

reporting it using a word that refers to the speech act of the referent (say) and using a third person subject, which functions as the source of the information. A counterfactual assumption and a counterfactual implicature also satisfy FIT since it is not uncommon for a speaker to tell an addressee that someone else has told him that something is the case, in this case that the dress was beautiful when the reality is not the same as what the referent said. He might use that sentence to express his emotion, to tell the addressee that he regrets for having bought the dress and to show that he is wondering why the referent said something different from the reality. From the three candidates, the first and the second candidates violate *MEANING SHIFT, hence they are no longer an option. For the input in this tableau, we get the third candidate i.e. factual information as the optimal one.

Now we consider how the interpretation of the bare verb *kato* ‘say’ shifts its basic interpretation to a counterfactual implicature interpretation. In the following tableau, we see how the optimization process works.

Tableau 16. Optimization process for the interpretation of the bare verb *kato* with a second person marker.

Kato kau baju tu eloq say 2 nd Sg garment that beautiful	FIT	*MEANING SHIFT
Counterfactual assumption	*!	*
i Counterfactual implicature		*
Factual information	*!	

In tableau 16, we can see that the constraints are ranked the same as the previous one. However, the interpretation that comes out to be the optimal one is not the same since the input form given in the tableau is different. The subject used in the sentence with the bare verb *kato* is a second person pronoun. With this combination, we cannot get a counterfactual assumption interpretation since having an assumption relate to a private domain which indicates that it belongs to the first person subject (the speaker). Therefore, a counterfactual assumption does violate FIT (the highest constraint). Hence, it is no longer an option. A factual information interpretation also does not satisfy the highest

constraint since it is pragmatically odd that a speaker tells the addressee what the addressee says. Finally, only a counterfactual implicature satisfies the highest constraint. The form indicates what has already been said by the addressee. Since it is not common to convey what has been said by an addressee to the addressee, the interpretation of a sentence with a second person pronoun and ‘say’ must have something more than what is stated explicitly. The reading of *Kato kau baju tu eloq* implies a question(s) i.e. ‘why did you say that dress was beautiful?’ or ‘why is the dress not as beautiful as you said?’. Therefore, we get a counterfactual implicature interpretation as the optimal candidate.

Having considered the optimization process for input forms that use third and second person pronouns, now we come to the last input i.e. an input form using a first person marker as the subject. As we saw in the previous discussion, the use of a first person subject with the bare verb *kato* will give rise to counterfactual assumption as well as implicature interpretations. The optimization process to get these interpretations as the optimal candidates will be illustrated in the last tableau below.

Tableau 17. Optimization process for the interpretation of the bare verb *kato* with a first person marker.

Kato aku baju tu eloq say 1 st Sg garment that beautiful	FIT	*MEANING SHIFT
☞ Counterfactual assumption		*
☞ Counterfactual implicature		*
Factual information	*!	

In tableau 17, from the three candidate meanings, counterfactual assumption and counterfactual implicature interpretations satisfy the highest constraint and these make both come out as the optimal candidates. The use of the bare verb *kato* with a first person subject cannot give rise to a factual information interpretation as it is pragmatically odd for a speaker to say what he knows by saying that he is saying it. Therefore, the third candidate i.e factual information does not satisfy FIT. By violating the highest constraint it is then out of the race. The use of the first person subject with the verb *kato* (‘say’)

indicates, following Dahl's term (1997), the 'internal reality' made public. The speaker has made an assumption and then uses the verb *kato* 'say' to release what has been assumed in his mind. The combination of the first person marker and the verb *kato* (say) is used after he realizes that what he assumed is different from the reality. In this sense, a counterfactual assumption satisfies FIT. A counterfactual implicature might also satisfy FIT and become optimal since this sentence implicates that the speaker has realized that what he has assumed so far is false. *Kato aku baju tu eloq* 'I thought that dress is beautiful' can be used as an implication of saying *prkiraan aku tntang baju tu salah* 'I made a wrong assumption about that dress'.

4.3 Conclusion

In this chapter, I have shown that the use of person markers indeed influences the interpretation of the bare verb *kato*. We saw that the construction of the sentences were the same but with different person markers as the subject, the interpretation shifts its basic meaning from giving factual information when it uses a third person pronoun, to a counterfactual implicature interpretation when the subject is a second person pronoun. The interpretation shifts to a counterfactual assumption and a counterfactual implicature when the subject in the sentence is a first person pronoun. The same as the bare verb *raso*, the optimization process of the possible interpretations also uses conflicting constraints in OT Semantics.

4. General Conclusions

In this thesis I have investigated the use of some polysemous items in Jambi Malay. They are *raso* and *kato*. These two items have several things in common. Both can function as a verb as well as a noun and can be inflected by some affixes. In this study, considering the limited time I have, I restricted myself to the analysis of these items as a bare verb. Before coming to the analysis of the bare verbs *raso* and *kato*, in chapter 2, I presented an explanation about Optimality Theory in general and OT Semantics in particular, polysemy, and some studies dealing with optimization process of polysemous items in some languages i.e. a preposition in English (*a (round)*) by Zwarts (2004), and modal verbs in Dutch by Foolen and de Hoop (to appear).

In chapter 3, I gave the analysis of the bare verb *raso*. By examining sentences containing the bare verb *raso* in the corpus, I got three main interpretations of the bare verb *raso* i.e. ‘feel (experiencer-like)’, ‘think (epistemic)’, and ‘examine’. From the analysis, I have shown that the interpretations are all related to one another and it can indeed be categorized as a polysemous item.

In chapter 4, I have investigated how the bare verb *kato* shifts its basic interpretation. From the analysis it was found that the bare verb *kato* can have three possible interpretations i.e. factual information, counterfactual implicature, and counterfactual assumption as well as implicature interpretations. In chapter 3, we saw that the emergence of different interpretations of the bare verb *raso* can be influenced not only by the subject markers but also by the construction of the sentences, while in chapter 4, the difference in the interpretations of the sentences containing the bare verb *kato* is merely due to the subject markers.

In the subsection of chapters 3 and 4, I also found the answer to my question in the introduction of this thesis i.e. how does a speaker come to the optimal interpretation? The ability of a speaker to find out the optimal candidate from all possible interpretations of the bare verb *raso* and *kato* is explained through an evaluation process of possible candidates by a set of violable constraints in OT Semantics.

Finally, in this thesis I have shown that the use of person markers indeed influences the interpretation of ambiguous items. And, OT Semantics apparently can be used to see how different interpretations are obtained using a set of violable constraints. Since the two polysemous items can be inflected by some affixes, it might be useful for further study to see how the interpretations differ in some other contexts, for example when they are inflected by affixes. It might also be interesting for further studies to see how the bare verb *kato* ('say') has different interpretations with different subject pronouns used in both direct and indirect speech since it might give a more comprehensive analysis of this polysemous verb.

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