CHAPTER 3

PREVIOUS THEORIES

3.1 Introduction

As mentioned in the introduction, the argument-function linking patterns in Yami highlight some problems in previous syntactic theories. In this chapter we will examine how different syntactic theories describe argument-function linking and demonstrate the problems they meet in accounting for the Yami data.

The first part of this chapter introduces the transformation-based theories. Theories of this type have evolved into several different versions, but the linking mechanism is basically the same. We will first consider the basic mechanism and then examine the attempts to apply this kind of theories to Austronesian languages.

The second part of this chapter introduces the lexicalist theories, taking the Lexical-Functional Grammar (LFG) as an example. In LFG there is a specific sub-theory used to account for argument-function linking, that is the Lexical Mapping Theory (LMT). We will try to use LMT to account for the Yami data and show the problems.

Finally, the third part of this chapter introduces an Optimality Theory-based model proposed in Legendre et al. (1993), used to account for the linking between

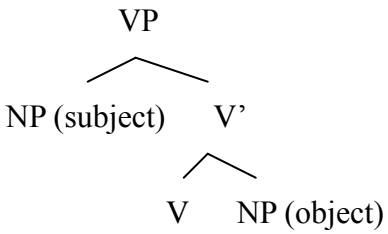
semantic arguments and grammatical cases.

3.2 Tranformation-based theories

3.2.1 Basic mechanism

In transformation-based grammatical theories, grammatical functions like subjects and objects are defined structurally according to their places in the phrase structure. For example, the object is defined as the complement of the verb, and the subject is defined as the specifier of VP, as shown in (49).

(49)



Argument roles generated by the verb are presented in the so called “theta grid”. Each verb may generate different argument roles (or “theta roles”, the widely used term for transformational grammar). For example, a simple transitive verb may generate two theta roles, the agent and the patient. The theta grid of this verb is formed by ordering these two roles according to the thematic hierarchy. There are several versions of the “thematic hierarchy”, differing only slightly from each other. (50) is the thematic hierarchy proposed in Falk (2000: 104).

(50) Agent> Patient/Benefactor>Instrument> Theme> Path/Location

Thus the theta grid of a simple transitive verb is <agent, patient>. In transformational grammar, the mapping of these theta roles to grammatical functions is done through case assignment and movement.

When there are no movements, arguments are put in different places according to their position in the theta grid. Basically higher roles are put in higher places. For example, as the agent is the higher role in a simple transitive sentence, it is put in subject place and the patient is put in object place. The verb then assigns each argument a case; the agent would get a nominative case and the patient an accusative case. However, when the verb changes voice, case assignment can change and that would motivate movement. In the English passive, where the verb is affixed with a passive marker, the verb loses its ability to generate an agent role and does not assign a case to the patient. Thus when a verb is in the passive, two things can happen. First, the subject position is empty because the verb does not generate an agent role. Furthermore, since the patient does not get a case, it then moves up to the empty subject place and gets case there.

Applying this concept to Yami, if the voice construction of Yami selects different subjects, the verb also has to change its case assignment ability so that the selected arguments can lose cases and move up to the subject place. For example, in PV sentences, the patient should not receive a case at its original place. It then can move

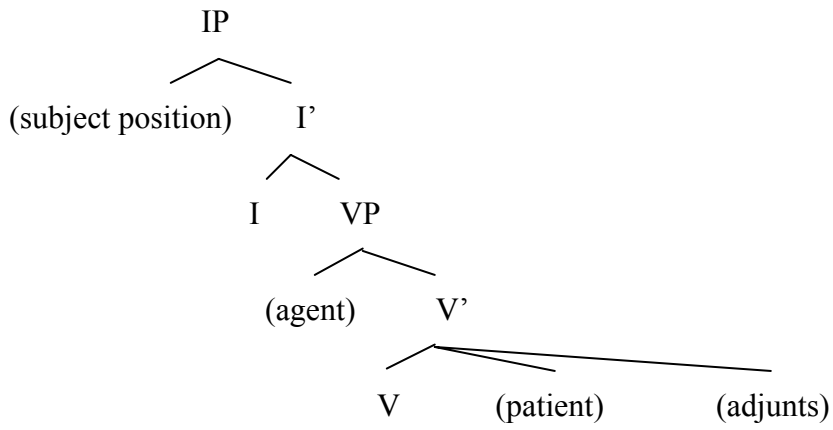
up to the subject place to get a case and become the subject, similar to the English passive voice.

However, the difference between English and Yami is that the agent in the English passive is a non-term, thus the passive verb does not generate an agent role. In Yami the genitive agent in a non-AV sentence is a term. If the agent is a term and generated in the subject place, no other roles can move to replace it as the subject. Hence this model is not completely fit to deal with the Yami data.

3.2.2 Guilfoyle, Hung, and Travis

In order to solve this problem, Guilfoyle, Hung, and Travis (1992) (henceforth GHT) designed a model to account for the Malagasy voice system (they refer to the voice system as the topic construction). They proposed two subject positions: spec of VP and spec of IP. Spec of VP is where agents originate, and spec of IP the derived subject position, as is shown in (51)

(51)

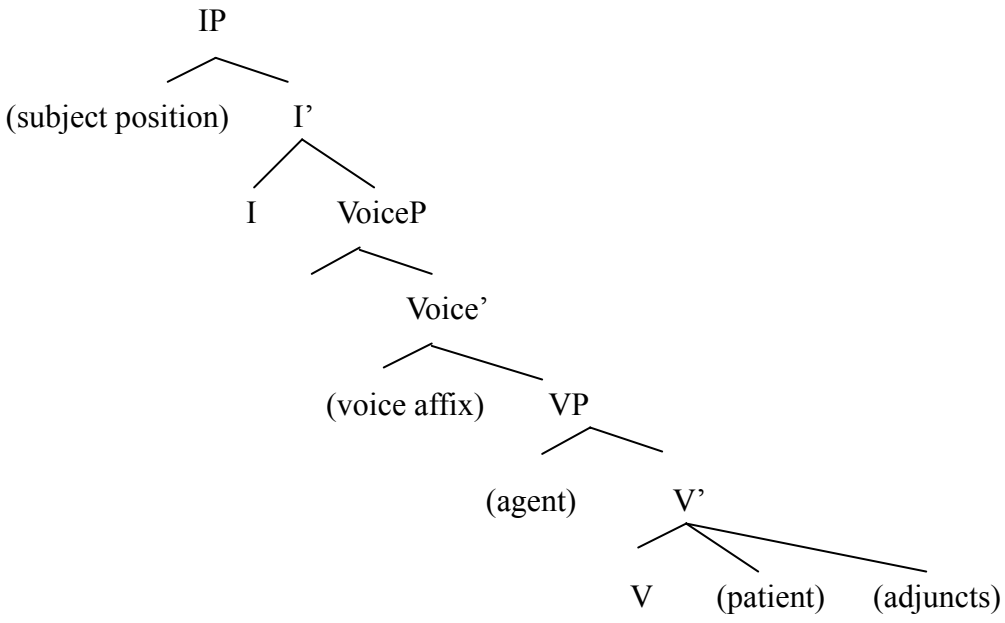


With two subject places, the agent would not always be the sole subject. Other arguments may also become the subject while the agent is still a term and remains in VP spec.

In the GHT model, the voice marker retains the ability to assign cases. As AV [10] markers only assign cases to patients, the agents would then rise to IP spec to get a nominative case; by contrast, as PV markers assign cases to agents, the patients would move to receive cases. Finally, as IV or LV markers assign cases to both agents and patients, adjuncts can be moved up to become the subject.

Chang (1997) also used a similar model to interpret the voice system of Seediq and Kavalan. He added a voice phrase to license the non-AV voice affixes, rendering a non-AV sentence the structure in (52).

(52)



With this structure, case assignment can be done within voiceP, while other parts are basically the same as in the GHT model.

Sells (1998) however points out some infacilities of the GHT model. First, when the verb is in IV or LV, GHT assumes that the voice marker assigns case to both agents and patients, allowing them to both remain in their own places while other roles (that is, adjuncts) move up. However, adjuncts do not get cases from the verb. Their cases are assigned by prepositions. That means even if the verb did not assign case to the adjuncts, they still do not have motivations to move up. Therefore GHT must assume that in LV and IV, the preposition is incorporated into the verb. However, in AV and PV sentences, the incorporation can not happen because in these sentences adjuncts have to receive their cases from prepositions. The incorporation account then becomes an extra statement for IV or LV sentences.

Moreover, the GHT model is quite different from that used on other languages. For example, it would be difficult to define the genitive agent from the perspective of a universal grammar. It is also “subject” in GHT; however, it is hard to compare it to the subject function in other languages since there are no two subjects in other languages.

---

[10] In GHT the voice system for Malagasy is called the topic construction, therefore AV is AT (agent topic) in GHT and PV is TT (theme topic). IV or LV is similar to their circumstantial topic (CT), which chooses adjuncts as subjects.

There are still others who account for Austronesian languages with voice systems in transformation-based theories (Paul 2000; Manning 1995). Manning (1995) even identified Tagalog as ergative and discussed it together with typical ergative languages such as Dyirbal. The models they proposed are both similar to GHT's, for example, Manning's model applies the VP-internal subject hypothesis and makes IP spec the derived subject position. Therefore the problems mentioned above still exist. And then we will turn to another camp of grammatical theories, called the lexicalist theories.

3.3 Lexicalist theories

In lexicalist theories, grammatical functions are primitives, not just structural places. In this camp, the mapping between arguments and grammatical functions is more direct. Here we take Lexical-Functional Grammar (LFG) as a representative theory. In LFG, there is a sub-theory used to deal with argument-function linking, namely the Lexical Mapping Theory.

3.3.1 Lexical Mapping Theory

Lexical Mapping Theory (LMT) is developed in Bresnen and Kanerva (1989) as a subpart of LFG to account for argument-function linking. In LMT, two features [r] and [o] are used to differentiate between four grammatical functions. The [r] feature stands for restrictedness, which shows the property of being restricted for certain

thematic roles. The grammatical functions oblique and secondary object (or indirect object) are thus [+r] because they are restricted for the thematic role that they could bear. In contrast, subjects and objects are [-r]. The [o] feature stands for objects or object related functions. It is quite clear then objects and secondary objects are [+o] while subjects and obliques are [-o]. The relation of these two features and the grammatical functions is shown in (53)

(53)

	-r	+r
-o	Subject (SUBJ)	Oblique (OBL)
+o	Object (OBJ)	Secondary Object (OBJ2)

Then argument-function linking is done through a set of mapping rules. These rules first partially assign some features to the arguments, and then set up some mapping principles. The mapping rules are shown in (54): (cf., Bresnen 2001, p366).

(54) (a) Semantic Classification of A-structure Roles for Function (SC):
patient-like roles: [-r]
secondary patient-like roles: [+o]
other roles: [-o]

(b) Mapping Principle (MP):
1. Subject mapping:
[-o] role that is theta-hut is mapped to subject, otherwise
[-r] role is mapped to subject.
2. Other roles are mapped to the lowest compatible function.

In this mapping mechanism, thematic hierarchy is very important. The

“theta-hut” in subject mapping principle is the highest role in the thematic hierarchy.

Take a simple English transitive sentence as an example, in a sentence like “John kicks Bill”; the verb generates two theta roles, the agent and the patient. According to the semantic classification rule, the patient receives a [-r] feature and the agent a [-o]. The application of the mapping rules is demonstrated in (55).[11]

(55) John kicks Bill

Input: Verb	<	ag	,	pt	>
	SC	[-o]		[-r]	
Possible functions		S/OL		S/O	
	MP	S		O	
Output:	Verb (	S	,	O	)

Since the highest role in the thematic hierarchy is the theta-hut, here the agent is the theta-hut. As the agent receives [-o] feature, it is mapped to the subject according to the subject mapping principle. The patient is then mapped to the object, which is the lowest possible function.

However, since the agent is the highest role in the thematic hierarchy, it would always be the theta-hut whenever it is present. In this model, therefore, the agent is

[11] Here short forms of the names of functions and roles are used: for grammatical function, S is subject, O is object, OL is oblique, and O2 is secondary object; for argument roles, ag is agent, pt is patient, th is theme, loc is location, ins is instrument.

always the subject when it exists, since the agent would always receive [-o] according to the semantic classification rule, and [-o] roles which is the theta-hut is mapped to subject.

Therefore, issues can occur when this model accounts for a sentence where a non-agent role can serve as the subject while the agent is also present. For example, in Mandarin Chinese, there are subject-object inversion sentences where the patient is the subject and the agent is the object. Yami non-AV sentences also have instances where the agent is the object while a non-agent role is the subject.

In order to account for these data, the mapping mechanism needs some modification. Her (2003) proposed a simplified LMT to account for the Mandarin subject-object inversion data.

3.3.2 Simplified LMT

Since the reason why LMT can not account for inversion mapping is that the [-o] feature is fixed for the agent role, Her (2003) modified the semantic classification so that not every role is assigned a fixed feature. The simplified classification is in (56):

(56) Simplified Classification of A-Structure Roles (SC):
1. patient/theme [-r]
2. secondary patient/theme [+o]

A default morphosyntactic operation is added to define the lower roles:

(57) Default Morphosyntactic Operation (DC):
All other roles that are not theta-hut are assigned [+r]

And finally the mapping principle is also simplified:

(58) The Unified Mapping Principle (UMP):
The most prominent role available* in a-structure is mapped onto the most prominent function available.
(*A role is *available* if it is not linked to a function, and conversely.)

The advantage of this simplified version of LMT, in addition to the simple and unified mapping principle, is that the agent is not specified for certain features. In this version, therefore, the agent is not always mapped to the subject when present. However, since the mapping principle still observes the "prominence" of the theta roles, in dealing with the linking that does not observe the hierarchy, some language-specific rules should be added.

For example, the Mandarin locative inversion construction is a kind of "inverse-mapping". In this kind of sentences, the location, which is the lower role, is mapped to the subject while the theme, which is the higher role, is mapped to the object. (59) shows that even simplified LMT gets incorrect results for this kind of sentences.

(59) Argument-function linking of locative inversion sentence:

Input:	V (	th	,	loc)
	SC	[-r]		
	DC			[+r]
Possible Function		S/O		OL/O2
UMP		S		OL
Output:		(S	,	OL)

The result we get is (S,OL) while the correct one should be (O,S). Therefore, Her used a "locative inversion morphosyntactic operation" to override the default morphosyntatic operation in order to account for the locative-inversion data.

(60) Locative Inversion Morphosyntactic Operation (*LI*)

verb <	*th*	*loc*	>
	[+*o*]	[-*r*]	

Therefore, the mapping would become like (61) and we get the correct result.

(61)

Input:	V (	th	,	loc)
	SC	[-r]		
	LI	[+o]		[-r]
	DC			
Possible Function		O		S/O
UMP		O		S
Output:		(O	,	S)

Following this line, we could also set up a language-specific morphosyntactic rule to account for the voice system of Yami or other similar languages. For example, we could fabricate a rule as (62)

(62) Yami voice morphosyntatic rule (YV):
Voice marked arguments are assigned [-r, –o]

Then we can apply it to account for the Yami data. First we handle the PV sentences:

(63) Input: V(PV) (ag , pt)
SC [-r]
YV [-r],[-o]
DC

Possible Function S/O/OL/O2 S
UMP O S
Output: (O , S)

The result is that the agent is mapped to the object and the patient to the subject, which is the correct mapping.

However, this version of LMT still can not account for all the data. If we examine the mapping of the Yami AV sentences, we would get the following result:

(64)Input: V (AV) < ag , pt >
SC [- r]
YV [-o],[-r]
DC

Possible function S S/O
UMP S O
Output: (S , O)

The mapping principle maps the agent to the subject and the patient to the object. But this is incorrect since Yami AV sentences are intransitive and the patient in an AV

sentence should be linked to the oblique function. The problem is that in this version, the patient is always [-r]. As a result, it can never become an oblique. In Yami, nevertheless, the patient is marked oblique in non-PV sentences. Therefore, further modifications of this simplified version of LMT are necessary to account for the Yami data.

The only way to get correct linking results for Yami is to change the first rule of semantic classification. Instead of giving the patient [-r], we should give the agent [-r] since in Yami agents never seem to get an oblique function. The simplified LMT revised for Yami is thus as follows, where the default morphosyntactic operation and unified mapping principle do not change.

(65) (a) Simplified Classification of A-Structure Roles for Yami (SCY):
1. agent [-r]
2. secondary pt/th [+o]

(b) Yami voice morphosyntatic rule (YV):
Voice marked arguments are assigned [-r, –o]

(c) Default Morphosyntactic Operation (DC):
All other roles that are not theta-hut are assigned [+r]

(d) The Unified Mapping Principle (UMP):
The most prominent role available in a-structure is mapped onto the most prominent function available.

With this revision, Yami linking can be accounted for correctly. For example, the mapping of an AV sentence is in (66).

(66) Input: V (AV) < ag , pt >
SCY [-r]
YV [-o],[-r]
DC [+r]

Possible function	S	OL/O2
UMP	S	OL
Output:	(S	, OL)

Since the default morphosyntactic operation gives [+r] to the argument which is not the theta-hut, the patient in a Yami AV sentence can be correctly mapped to an oblique because it is not the theta-hut. The linking of PV and LV sentences can also be done with this revised rule. The PV linking process is in (67).

(67) Input: V (PV) < ag , pt >
SCY [-r]
YV [-o],[-r]
DC

Possible function	S/O	S
UMP	O	S
Output:	(O	, S)

The result shows the agent mapped to the object and the patient to the subject. The linking of an LV sentence is in (68)

(68) Input: V (LV) < ag , pt , lc >
SCY [-r]
YV [-o],[-r]
DC [+r]

Possible function S/O OL/O2 S
UMP O OL S
Output: (O , OL , S)

The result is (O,OL,S), which is also the correct mapping for an Yami LV sentence.

Normally, the default semantic classification rule may give [+r] to the patient and location, but in PV and LV the morphosyntactic rule for the voice marker gives [-r, -o] to patient and location respectively, overriding the semantic classification rule. However, in Yami when there is no voice marker, the linking would be the same as in PV. With our revised model, when the morphosyntactic rule for voice construction does not apply, we would get incorrect results, as in (69).

(69) Input: V < ag , pt >
SCY [-r]
YV
DC [+r]

Possible function S/O OL/O2
UMP S OL
Output: (S , OL)

When the rule for voice construction does not apply, the patient is given [+r]

according to the default morphosyntactic operation rule and linked to a peripheral oblique function. This differs from the fact that the patient is linked to the subject and the agent to the object when there are no voice markers.

Therefore this revised version of LMT is still unsatisfactory. Even if the cases where there are no voice markers are ruled out, our revised semantic classification will produce incorrect linkings for languages like Mandarin and English. Two sets of rules are thus mandatory for these two kinds of languages as their linking patterns are so different. In fact, rule-based linking theories may always have limitations when dealing with these differences. Therefore we turned to models based on the Optimality Theory (OT), which claims to have advantages in dealing with typological differences. In the next section we will first review the OT-based model of Legendre et al. (1993). And the new model we proposed in the next chapter is also OT-based.

3.4 Optimaility Theory-based account

Legendre et al. (1993) provides an analysis using the concept of OT. OT is proposed in Prince and Smolensky (1993) and is widely used to account for phonological phenomena. Syntacticians are also now starting to apply the concept of OT in syntax (Aissen 1999, Morimoto 1999, Sells 2001). The concept of OT is to have a set of well-formedness constraints apply simultaneously to representations of structures, but they are also potentially conflicting. To achieve UG, at least an

important set of these constraints is shared by all languages, while individual languages can rank these constraints differently (Gilberts and de Hoop 1998). Thus Legendre et al. (1993) set up several universal constraints for linking arguments to grammatical cases, and use different constraint rankings to account for different linkings in different languages. The constraints they propose are:

(70) Argument-case linking in Legendre et al. (1993)
a. A = C1: Agents receive abstract case C1
b. P = C2: Patients receive abstract case C2
c. A≠ C2: Agents do not receive abstract case C2
d. P≠ C1: Patients do not receive abstract case C1
e. α≠C4: Core arguments (agents and patients) do not receive abstract case C4
f. α= C2: Some argument is case marked C2
g. X = C1: High prominence arguments receive abstract case C1
h. x ≠C12: Low prominence arguments are not core case marked. (C1 or C2)

Among them C1 and C2 are the cases assigned to agents and patients in a simple transitive sentence in any language. For example, in an Englsih transitive sentence, the agent receives nominative case; the patient the accusative case, rendering the English C1 as nominative and C2 accusative, and C4 all the lower cases.

These constraints can be used to account for different kinds of voice systems. For example, for English types of voice systems, if we consider the voice marked element as prominent, the above constraints can be used to account for the passive voice in English, as in (71).

(71)

Input	output	X = C1	x ≠C12	α= C2	A≠ C2	A = C1	P≠ C1	P = C2	α≠C4
aP	a1P2	*!	*						
	a2P1		*!		*	*	*	*	
	→a4P1			*		*	*	*	*
	a4P2	*!				*			*

In this tableau, the input means the semantic arguments of a passive verb, and the output their different possible linkings to cases. The asterisk mark means violation of the constraint, and the exclamation mark means a fatal violation. A capital letter stands for the prominence of the argument. The winning candidates are then visibly the instances where the patient is mapped to the nominative case and the agent is mapped to the oblique case, which is the correct result for an English passive.

According to Legendre et al. (1993), these constraints can also be used for other languages with very different linking patterns, only with different constraint ranking. For example, in an ergative language, a basic transitive sentence will mark its agent in the ergative case and the patient in the absolutive case. Therefore, in this kind of language C1 is ergative and C2 is absolutive. Also in an ergative language there is antipassive voice, which promotes the agent and marks it in absolutive while demoting the patient to the oblique. The output of the linking for this antipassive construction is A2p4. If we adopt the same constraint ranking as is used for English, the result we get is A1p4, as is pointed out in (72).

(72)

Input	output	X = C1	x ≠C12	α= C2	A≠ C2	A = C1	P≠ C1	P = C2	α≠C4
Ap	A1p2		*!						
	A2p1	*!	*		*	*	*	*	
	A4p1	*!	*	*		*	*	*	*
	→A1p4			*		*		*	*
	A2p4	*!			*	*		*	*

However, Legendre et al. (1993) proposes that with a different constraint ranking, a correct result can be achieved. The ranking proposed is as follows:

(73)

Input	Output	x ≠C12	α= C2	X= C1	A≠ C2	A = C1	P≠ C1	P = C2	α≠C4
Ap	A1p2	*!							
	A2p1	*!	*	*	*	*	*	*	
	A4p1	*!	*	*		*	*	*	
	A1p4		*!					*	*
	→A2p4			*	*	*		*	*

Changing only the ranking of the first three constraints, the linking result of two very different languages can be achieved.

Then we consider the linking of case and argument in Yami under the influence of its special voice system. In Yami the simple transitive sentence marks the patient as nominative and the agent as gentive. Therefore in Yami C1 is genitive and C2 is nominative, while C4 is all other lower cases, including locative and oblique. Using the model proposed in Legendre et al. (1993), the linking result for Yami AV sentence is A2p4, and PV is a1P2. If we use X to stand for location or instrument, LV or IV

sentences are a1p4X2.

The result for Yami AV sentences is just like that for the antipassives in the ergative languages. Therefore, it may be suggested that the constraint ranking used for ergative languages can also be used for Yami. However, if we apply this ranking to PV sentences, we can not get the correct result. In Yami PV sentences, the patient is linked to the nominative case and the agent to the gentive case so the correct linking should be a1P2. However, with the constraint ranking used previously, we would get a4P2

(74)

	Output	x ≠C12	α= C2	X= C1	A≠ C2	A = C1	P≠ C1	P = C2	α≠C4
aP	a1P2	*!		*					
	→a4P2			*		*			*
	a4P1		*!			*	*	*	*
	a1P4	*!	*	*				*	*
	a2P4	*!		*	*	*		*	*

It is mentioned that the Yami PV sentence is transitive and therefore both agents and patients are terms. However, the first constraint x≠C12 will prevent the agent, which is the non-prominent role of a PV sentence, to link to a core function. Even when the first constraint is lowered, it is still difficult to get correct results, because the X=C1 constraint will map prominent role to C1. In Yami C1 is the gentitive case. However, in a PV sentence, the prominent role (patient) is mapped to nominative

case.

Given that the C1 case is assigned to the agent in a basic transitive sentence, the X=C1 constraint suggests that the agent is the prominent role because the prominent role gets the case which is normally assigned to the agent. Therefore, for a language like Yami in which the patient is often prominent because PV sentences appear quite often, this constraint should be revised.

3.5 Summary

After examining different syntactic theories in argument-function linking, we find that none of them can successfully describe the Yami data. We see that both in the transformation-based theories and lexicalist theories, argument-function linking depends itself on the thematic hierarchy. And the agent is always the highest role in the thematic hierarchy. It can thus be stated that these theories are all “agent-oriented” in argument-function linking. Unfortunately, Yami is a language in which agents do not play such an important role. The transitive sentence in Yami, whether in PV or IV or LV, does not take agent as its subject.

For this kind of language, different linking theories must be designed according to its unique linking pattern. Since a basic transitive sentence seems to take the patient as its subject, a more “patient-oriented” linking theory should be fabricated in comparison to the “agent-oriented” linking theories.

Two different sets of linking theories may consequently be used to account for the different linking patterns in different languages. But according to the concept of language universal, it is ideal to apply the same theory to all languages. The unique nature of Yami thus necessitates the adoption of the concept of OT. Although the OT-based model of Legendre et al. (1993) has been proved to be imperfect when dealing with the Yami data, the concept of OT is still worth trying. According to the description in this chapter, the problem with the model in Legendre et al. (1993) is that some of the constraints proposed are still "agent-oriented." Therefore if we set a set of "neutral" constraints, it is still possible that both Yami and English data can be successfully interpreted.