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Chapter 2

Typological investigation of six modal systems

The major difficulty that arises when one wants to pursue a typological work on modality is the scarcity of descriptions of modal systems from a semantic perspective. Most descriptive grammars do address the issue of modality but not always in enough depths to make it useful from a semantic point of view. By this remark I do not intend to depreciate the incredible amount of work that is needed to complete a descriptive grammar. The genesis of this chapter has taught me that it is by no means an easy task. However it has also reinforced my belief that there is a great need for semantically motivated descriptions of modal systems. Part of the goal of this chapter is to provide such a description for six different languages. The descriptions of the modal systems will however not be exhaustive and reflect my interest for the combinations of modal elements. Although exhaustiveness was not the goal of those descriptions, I hope to have highlighted the most important properties of the modal systems and provided the reader with enough references to the literature as to where to find more detailed discussions.

I will now present the modal systems of six languages: Dutch, Fon cluster, Korean, Lillooet, Turkish and Tuvaluan. The goal of this chapter is to describe some of the diversity in how the world's languages express modality. Therefore, the six languages have been chosen from different phyla and are geographically widely spread.

The choice of those languages is also based on the availability of written sources (grammar, articles, written texts) and informants (native speakers and/or language specialists). Finally, the languages have been selected for their relatively rich modal systems.

The chapter will be organized as follows: I will for each of these languages give a succinct grammatical overview and then present the modal system.[1] I

[1] I do not claim to give a complete account of all nuances of modality within those languages nor of all possible ways to express modality.

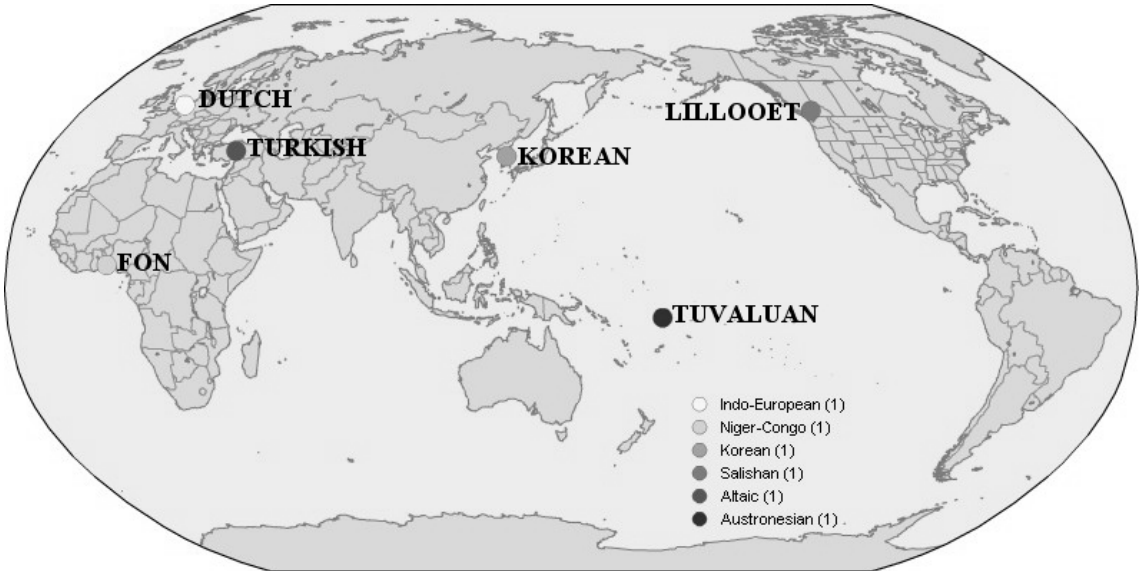

Figure 2.1: Language sample

will use the typology presented in the previous chapter as a guideline. I will furthermore look at combinations of modal items for each language in order to test the following hypothesis about the semantics of modal items:

Hypothesis 2.0.1 (Modal scope hypothesis)**.** If two modal items from different types are combined within the same clause in a grammatical sentence, their relative semantic scope will fall within the following pattern:

Epistemic > Participant-external > Participant-internal

I will finally present some general conclusions on the base of those languages and for instance argue that the scope hypothesis is verified.[2]

2.1 Dutch

The Dutch language is an Indo-European language of the Germanic family. It is spoken by around 23 million people mainly in the Netherlands, Belgium, the Netherlands Antilles, Aruba and Suriname. Dutch word order is quite flexible but is usually characterized as SVO/SOV. The only 'hard' rule is that in main clauses, the finite part of the verbal group comes in second position whereas the infinite part (infinitive, participles) is placed in final position.[3] The following table is adapted from (Fehringer 1999, table 44 p113):

[2]In this chapter, the source of some examples is not mentioned. Those examples were made up and checked with my informants.

[3]See (Shetter and Van der Gruysse-Van Antwerpen 2002, p179), (Fehringer 1999, p112).

Basic		hij 3M.SG	gaat go.3SG		morgen tomorrow	naar huis to home	
Complex		hij 3M.SG	zal FUT.SG		morgen tomorrow	naar huis to home	gaan go
Subordinate	omdat because	hij 3M.SG		morgen tomorrow	naar huis to home	gaat go.3SG	
Inverted	morgen tomorrow		gaat go.3SG	hij 3M.SG		naar huis to home	
After subordinate	als hij kan, if 3M.SG can.SG		gaat go.3SG	hij 3M.SG	morgen tomorrow	naar huis to home	
Question			gaat go.3SG	hij 3M.SG	morgen tomorrow	naar huis? to home?	

The case system has almost completely disappeared and only subsists in some archaic forms (in particular for the genitive). Dutch expresses three genders, masculine, feminine and neuter, on its pronouns. The next table is taken from (Fontein and Pescher-ter Meer 2000, p122):

		Singular		Plural	
Person		Subject	Object	Subject	Object
1		ik	mij/me	wij/we	ons
2		jij/je	jou/je	jullie	jullie/je
	formal	u	u	u	u
3	masculine	hij	hem	zij/ze	ze
	feminine	zij/ze	haar		hun/hen
	neuter	het	het		

Some verbs have a separable prefix that is usually placed at the end of the clause when the verb is finite. Most prefixes are prepositions (*uit-geven*: out-give, 'to publish') or adverbs but can also be adjectives (*schoon-maken*: clean-make, 'to clean') or nouns (*plaats-vinden*: place-find, 'to take place'). In infinite forms, the infinitival marker *te* occurs between the separable prefix and the verb. Notice that some of the separable prefixes can also occur as non-separable even on the same verb form. In this case, accent placement is used to disambiguate between the two infinitival: *vóór-spellen* (separable, 'to show how to spell a word') and *voorspéllen* (non-separable, 'predict, foretell') (*E-ANS* 2004, 12.2.2.1).

2.1.1 Dutch modal system

I will first give a rough sketch of the Dutch modal system and then turn to the issue of combinations. Following (van der Auwera and Plungian 1998), there are

three main types of modality: participant-internal, participant-external and epistemic modality. I will follow the insight according to which those types of modality are tightly connected with the notions of possibility and necessity. Therefore items expressing moral judgments such as 'good', 'better', etc. will not be treated. Some examples in this section are taken from the online edition of the Dutch newspapers NRC Handelsblad and De Volkskrant but also from (Nuyts 2004) and (Nuyts, Byloo and Diepeveen 2005) (although Nuyts adopts a much broader notion of modality than I will).

Participant-internal modality

Participant-internal modality has to do with ability/capacity and the internal needs of the agent or, as van der Auwera and Plungian (1998, p80) formulates it, as "a kind of possibility or necessity internal to a participant engaged in the state of affairs."[4] This type of modality can be subdivided in three main parts: physical ability, learned ability and circumstantial ability/possibility (ability with respect to external conditions). This can be expressed in Dutch through two different kinds of constructions:

Participant-internal	
Modal verbs	Lexical constructions
kunnen	*in staat zijn om*
moeten	*in de gelegenheid zijn om*
hoeven	

The modal verb[5] *kunnen* is quite versatile and is used for (all) other types of modality (i.e. participant-external and epistemic). It is also versatile within the participant-internal type.

(1) a. Hij kan heel goed zwemmen.
3M.SG can.SG very good swim
'He can swim very well / He's very good at swimming.'
(Haeseryn, Romijn, Geerts, de Rooij and van den Toorn 1997, p996)

[4]Notice that the agent need not be animate.

[5]Nuyts et al. (2005) refer to what I call modal verbs as "modal *auxiliary* verbs." However Dutch modal verbs do not seem to be as grammaticalized as their English counterparts. For instance, Dutch modal verbs do not always need a VP complement as shown in the following idiomatic construction:

(i) Alleen betrokkenen mogen naar binnen...
only concerned.people.PL may.PL PREP inside
'Only concerned people may [go] inside [wearing a helmet].'

I will therefore use the more neutral denomination "modal verb" most of the time.

b. Jan kan weer trainen.
John can.SG again train
'John can train again.'

c. Op zaterdagmiddag kan hij nooit zwemmen...
on Saturday.afternoon can.SG 3M.SG never swim
'He can never swim on Saturday afternoon.'

(Haeseryn et al. 1997, p996)

The sentences of (1) exemplify the use of the modal verb *kunnen*. In sentence (1-a), the modal is interpreted as attributing a physical ability to the agent. The same sentence without the modifier *heel goed* could express learned ability as well. Sentence (1-b) can express both physical ability (John was injured but he is fit again) and circumstantial possibility (John was temporarily excluded by the trainer). Finally, sentence (1-c) is only circumstantial (this due to the recurring time interval) and shows that the modal verb takes scope under negation.

(2) Jan is in staat 100 kilo te tillen.
John COP.3SG PREP state 100 kilo INF lift up
'John can lift 100 kilos.'

The lexical construction *in staat zijn* (see sentence (2)) is mainly used for circumstantial and physical ability.[6] Finally, these two expressions of participant-internal modality combine with negation in a straightforward way (this is true independently of the precise interpretation, i.e. physical, learned or circumstantial):

(3) a. Ik kan niet slapen
1SG can.SG NEG sleep
'I cannot sleep.' (N09.02.07)

b. Erdems vader [...] is niet in staat om te
Erdem.GEN father COP.3SG NEG PREP state PREP INF

[6]The construction *in de gelegenheid zijn om* has a similar meaning but seems to be less frequent and more oriented toward circumstantial ability.

(i) Nederland was niet in de gelegenheid om Amerika na
Netherlands COP.3SG.PAST NEG PREP DET occasion PREP Amerika behind
te volgen in verspilling.
INF follow PREP wasting
'The Netherlands were not able to follow the US in wasting habits.' (N24.05.97)

It is interesting to notice that, although that construction is also specialized for participant-internal modality, if the copula *zijn* in *in de gelegenheid zijn om* is replaced by the verb *stellen* ('to place') the construction then means 'to enable' (*in staat stellen* is also possible) and that participant-external *kunnen* can also be expressed *de gelegenheid hebben* (*E-ANS* 2004, 18.5.4.4.iii.a).

werken.
work
'Erdem's father is not able to work.' (N19.02.00)

Examples (4-a) and (4-b) are representatives of participant-internal necessity. Nuyts et al. (2005, 24-25) do not have any examples in their corpora available but acknowledge that such examples make sense in Dutch.

(4) a. "Maar zou je de dia's volgende keer weer met bloemetjes
but would 2SG DET slide'PL next time again with flower.PL
versieren?" Suzanne moet lachen. "Waarom niet?"
decorate Suzanne must.SG laugh why NEG
"But will you use slides with flowers again next time?" Suzanne laughs. "Why not?" (N13.01.06)

b. "Ik moet plassen, kan ik even gaan?" vroeg ze
1SG must.SG pee can1SG 1SG ADV go ask.3SG.PAST 3F.SG
aan een collega.
PREP DET colleague
"I need to pee, may I go?" she asked a colleague. (N03.10.03)

In both examples, the participant-internal necessity expresses that the agent cannot prevent himself from performing the action in the scope of the modal. In sentence (4-a), a journalist reports a conversation. The modal sentence provides some background information and is meant to describe the reaction of the hearer (Suzanne) after the journalist's question. The modal has thus a present interpretation and does not need to be translated in the English gloss. On the other hand, in sentence (4-b), the participant-internal necessity has a future interpretation.

Participant-external modality

Participant-external modality contains deontic modality plus all those meanings that are neither epistemic nor about ability and capacity. I will follow (van der Auwera and Plungian 1998) and mainly concentrate on the deontic and goal-oriented meanings. In Dutch, these can be expressed via modal verbs and modal adjectives.[7]

[7]Deontic modality can also be expressed through a lexical construction with nouns expressing deontic notions as *toestemming* (permission) and *verplichting* (obligation).

	Participant-external	
	Deontic	Goal-oriented
Modal verbs	*moeten*	*moeten*
	hoeven	*hoeven*
	mogen	*kunnen*
Adjectives	*toegestaan*	*mogelijk*
	verplicht	*nodig*
	verboden	*noodzakelijk*

With respect to the modal verbs, there are separate possibility modals for permission (*mogen*) and for goal-oriented modality (*kunnen*).[8] The necessity modals are able to express both meanings. The adjectives also display such a distribution: *noodzakelijk* and *mogelijk* are mainly used for goal-oriented modality and the others are specialized for deontic modality.

Goal-oriented modality All the modals in the following sentences express participant-external modality, except *kunnen* in the first sentence of example (5-a) which expresses circumstantial ability.

(5) a. In China kan je een gezonde nier bestellen. De donor
LOC China can.SG 2SG DET healthy kidney order DET donor
moet alleen nog even worden doodgeschoten.
must.SG only still ADV AUX kill.PERF
'In China, you can order a healthy kidney. The donor only has to be killed.' (N28.01.06)

b. Wil je het goed doen, dan moet je minimaal twintig
want.2SG 2SG 3N.SG well do then must.SG 2SG at least twenty
minuten de tijd hebben voor iemand.
minutes DET time have for someone
'If you want to do it well, then you have to give each client at least 20 minutes of your time.' (N04.02.99)

The modal verb *moeten* in example (5-a) expresses thus goal-oriented necessity where the goal (≈"to get a kidney") is induced by the preceding clause. That the donor has to be killed is thus a necessary condition to "get your kidney." In example (5-b), *moeten* is featured in a typical instance of anankastic construction (which is a way to get a goal-oriented interpretation):[9] the (necessity) modal expresses a necessary condition for the fulfillment of the conditional antecedent.

[8] Although sentence (4-b) shows that it is not completely clear whether *kunnen* cannot be used for permission in spoken language.

[9] To my knowledge, (von Wright 1963, p10) was the first to describe those sentences as anankastic. See (Sæbø 2001) and (von Fintel and Iatridou 2004) for further discussion.

That is, to spend at least 20 minutes with each client is a necessary condition in order to do this work correctly.

(6) Je hoeft er pas om tien uur te zijn.
2SG need.3SG LOC only PREP ten hour INF COP
'You only need to be there at ten.' (*E-ANS* 2004, (6) 29.2.2)

Sentence (6) shows the mandatory use of a (here implicit) negative element (*pas om tien uur* 'not earlier than 10.00') in combination with *hoeven*. The negation or negative element always has scope over the modal *hoeven* and the construction expresses that something is not necessary.

(7) Als je meer wilt, kan je 70 procent van je huidige inkomen
if 2SG more want.2SG can.SG 2SG 70 percent of your current income
als maatstaf nemen voor een toekomstig pensioen...
as standard take for DET future pension
'If you want more, you can take 70 percent of your income as the standard for a pension.' (N24.07.07)

The possibility modal *kunnen* is used in sentence (7) to express that "to take 70 percent of your income as the standard for a pension" is a way of achieving what you want.

(8) Volgens hem is het nodig dat rijkere ouderen gaan
according 3M.SG COP.3SG 3N.SG necessary that richer elderly go
meebetalen aan de AOW om de gevolgen van de
with.pay PREP DET AOW PREP DET consequences of DET
vergrijzing op te vangen.
aging PREF INF catch
'According to him, it is necessary that richer elders will also contribute to the AOW in order to attenuate the consequences of the aging problem.' (N22.05.07)

Finally, sentence (8) exemplifies the use of an adjective (*nodig*) in a goal-oriented interpretation with a purpose clause. Probably the most important thing to notice about all these examples is that they actually feature two different kinds of construction: in (5-b), (6) and (7) the purpose clause (or conditional) and the necessary condition are co-indexed whereas this is not the case in (5-a) and (8). The difference is that, in the first case, the necessary condition stands for an action the agent has to perform to reach *his* goal whereas, in the second case, a certain state has to hold in order to reach the goal.

Deontic modality Sentences (9-a) and (9-b) express respectively prohibition and deontic permission. The interdiction in (9-a) can be interpreted as being

(metaphorically) imposed on the agents (and subjects) Tom and Jerry. However, the permission in (9-b) is not really directed to the subject of the sentence (doves and homing pigeons) but rather to people who own them.

(9) a. Tom en Jerry mogen niet meer roken.
Tom and Jerry may.PL NEG more smoke
'Tom and Jerry are not allowed to smoke anymore.' (N21.08.06)

b. Sier- en postduiven [...] mogen vanaf volgende week
dove and homing.pigeon.PL may.PL from next week
woensdag weer naar buiten.
Wednesday again PREP outside
'Doves and homing pigeons are allowed outside from next Wednesday on.' (N08.03.06)

This shows, as Wurmbrand (1999, p611) puts it, that the roles of *obligee* or *permissee* "do not have to coincide with a specific syntactic argument in the sentence." In fact, sentence (9-a) can also be understood as forbidding television companies to broadcast cartoons where Tom and Jerry smoke.

(10) Landis hoeft zijn gele trui nog niet in te leveren.
Landis need.3SG his yellow jersey yet NEG PREF INF give
'Landis doesn't have to give back his yellow jersey yet.' (N07.08.06)

As in the case of goal-oriented modality, *hoeven* needs a negative element to form a grammatical deontic sentence and it is also interpreted with the negation having scope over the necessity modal, i.e. as 'not obliged to.' On the other hand, the modal verb *moeten* in its deontic interpretation takes scope over the negation and is interpreted as 'obliged not to.' The following examples are typical adjectival constructions of deontic sentences. Those constructions share a common denominator. Quite often, the *obligee* or *permissee* are not the grammatical subject but can be referred to through a for-clause as in (11-b) and (12-b). When this is not the case, the interpretation is usually generic as in (11-a) and (12-a).

(11) a. Dat is niet wettelijk verplicht.
DEM COP.3SG NEG legally mandatory
'That is not mandatory by law.' (N30.08.06)

b. In Iran zijn hoofddoek en lange mantel verplicht voor
LOC Iran COP.PL headscarve and long coat mandatory for
vrouwen.
women
'In Iran headscarves and long coats are mandatory for women.' (N22.05.06)

Sentence (11-a) says that something is not a legal duty, i.e. the negation has scope over the modal. Sentence (11-b) expresses a legal obligation for women (though

they are not the grammatical subject of the sentence).

(12) a. "Godslastering wordt helaas toegestaan in West-Europa."
blasphemy AUX.3SG alas allow.PERF LOC Western-Europe
"Alas, blasphemy is allowed/tolerated in Western Europe."
(N31.01.06)

b. Met het voorstel is selectie aan de poort mogelijk
with DET proposal COP.3SG selection PREP DET gate possible
voor het hoger beroepsonderwijs.
PREP DET higher technical education
'With this proposal, entrance selection is possible for the technical education branch.' (N10.02.06)

Sentences (12-a) and (12-b) both express permission; in (12-a) that blasphemy is allowed and in (12-b) that selection is allowed. In both cases, the subject of the sentence is not the actual recipient of the permission. In order not to get the impression that the subject in those adjectival constructions is never the actual recipient of the permission or obligation, observe finally the following sentence:

(13) We zijn verplicht samen te werken met het Tribunaal...
1PL COP.PL obliged together INF work with DET tribunal
'We are obliged to cooperate with the Tribunal [ICTY].' (N16.10.00)

Modal source of deontic modality A peculiarity of the Dutch system lies in the fact that the source of a deontic modal can be referred to in conjunction with the modal verb with the help of the preposition *van* 'of.'

(14) a. de speler mag van zijn club geen uitlatingen doen
DET player may.SG PREP his club NEG.DET comments do
over het incident.
about DET incident
'The player is forbidden by his club to comment on the incident.'
(N05.08.06)

b. Ook makers van huismerken moeten van de supermarkten
even producers of store.brands must.PL PREP DET supermarkets
nóg goedkoper leveren.
still cheaper deliver
'Producers of store brands also have to [based on the supermarkets demand] deliver still cheaper products.' (N25.02.06)

In sentence (14-a) and (14-b) the source of the prohibition and obligation are respectively a football club and supermarkets. The source is the authority necessary for any deontic statement. It can be a person or entity as well as the law, as can be seen in the examples in (11).

Epistemic modality

Epistemic modality "refers to a judgment of the speaker: a proposition is judged to be uncertain or probable relative to some judgment(s)" (van der Auwera and Plungian 1998, p81). As we will see with combinations of modals, the judgment is not necessarily the speaker's own but can also be attributed to other agents. There are three main classes of elements that express epistemic modality in Dutch. The modal verbs and the adjective *mogelijk* can also be used in participant-external modality. The epistemic adverbs and the second adjective (*waarschijnlijk*) cannot be used for any other type of modality.

	Epistemic	
Modal verbs	Adverbs	Adjectives
moeten	*misschien*	*mogelijk*
kunnen	*wellicht*	*waarschijnlijk*
	mogelijk	
	waarschijnlijk	

The following examples show some typical uses of the Dutch epistemic modals. For instance, the modal verb *moeten* in sentence (15-a) takes an impersonal pronoun as subject. An impersonal construction can also be used as in (15-b).

(15) a. ja 't moet liggen op Jersey of Guernsey.
yes 3N must.SG lie LOC Jersy or Guernsey
'Yes it must be situated on Jersey or Guernsey.'
(Nuyts et al. 2005, (6) p20)

b. Het kan zijn dat minister Verdonk te kort door de
3N can.SG COP that minister Verdonk too shoort through DET
bocht is gegaan bij het ontkennen van het
turn COP.3SG go.PERF PREP DET denial of DET
Nederlanderschap van mevrouw Hirsi Ali.
Dutch.citizenship of Ms Hirsi Ali
'It might be that Minister Verdonk was too quick in denying Dutch citizenship to Ms Hirsi Ali.' (N17.05.06)

In Dutch, the adverbs are probably the most pervasive way to express one's judgment (see example (16-a) and (16-b)). The use of a (predicatively used) adjective as in (16-c) is less frequent but is also attested.

(16) a. Misschien is het wel een verslavende bezigheid.
maybe COP.3SG 3N PART DET addictive occupation
'Maybe it is an addictive occupation.' (N02.10.06)

b. Juli 2006 wordt waarschijnlijk de warmste maand ooit.
july 2006 AUX.3SG probably DET hottest month ever
'July 2006 will probably become the hottest month ever.' (N22.07.06)

c. Het is mogelijk dat het paleis door aardbevingen
3N COP.3SG possible that DET palace PREP earthquakes
is verwoest.
COP.3SG destroy.PERF
'It is possible that the palace was destroyed by earthquakes.'
(N19.02.06)

Sentence (17) shows an embedding of a modal under a verb of saying. That is, the epistemic qualification is attributed to Senator Lieberman, not to the speaker.

(17) Senator Lieberman heeft erop gezinspeeld dat dit wellicht
senator Lieberman have.3SG PREP allude.PERF that DEM probably
ook zal gebeuren.
also FUT.AUX.SG happen
'Senator Lieberman alluded to the fact that this might happen.'
(N10.09.98)

Notice that some might object that examples (17) and (16-b) are actually not epistemic but metaphysical in the sense of (Condoravdi 2001, p3), i.e. they have to do with "how the world may turn out, or might have turned out, to be." However I will consider that this type overlaps with epistemic modality. One important observation to support this assumption is that very often, the same modal expressions are used to express both types.

Finally all modal verbs and adverbs take scope over negation and only the adjectives can scope under it.

Conclusion

The following table gives an overview of the different elements of the Dutch modal system.[10]

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Modal verbs	*moeten*	*moeten*	*moeten*	*moeten*
	hoeven	*hoeven*	*hoeven*	*hoeven*
	kunnen	*mogen*	*kunnen*	*kunnen*
Adverbs			*misschien*	
			wellicht	
Adjectives		*verplicht*	*mogelijk*	*mogelijk*
		verboden	*nodig*	*waarschijnlijk*
		toegestaan	*noodzakelijk*	
Lexical	*in staat zijn*	*toestemming hebben*		

[10]Remember that the list of modal elements presented in this section (and in this table) is not exhaustive but that I tried instead to give a representative view of the modal system.

2.1.2 Combinations of modal items

I will now turn to the problem of combinations of modal elements within one clause.

Epistemic and participant-external

The most frequent combinations in (Nuyts 2004) concern combinations of deontic modal verbs *moeten* and *mogen* with epistemic adverbs (and adjectives) *misschien* and *waarschijnlijk*. Furthermore, it is interesting to notice that Nuyts (2004) encounters some difficulties in interpreting the data. Nuyts is searching for combinations of deontic and epistemic items but rightfully acknowledges for quite a lot of examples that the distinction between a deontic or a 'dynamic' reading is not easily made.[11] This makes me more comfortable with using the (van der Auwera and Plungian 1998) classification of those 'dynamic' readings as deontic modality under the *participant-external* header.

(18) a. misschien moeten we maar een paar mentoren geblesseerd
maybe must.PL 1PL PART DET couple counselors injure.PERF
schoppen.
kick
'Maybe we have to injure a couple of student assistents.'
(Adapted from (Nuyts 2004, (23) p36))

b. misschien moet ik ook wel structuurrecht tentamen doen.
maybe must.SG 1SG also PART law exams do
'Maybe I must also take the law exams.'
(Adapted from (Nuyts 2004, (27) p37))

Examples (18-a) and (18-b) show a combination of the epistemic adverb *misschien* with the participant-external verb *moeten*. In particular, (18-a) contains a goal-oriented modal verb (in a discussion about how to achieve an organized weekend) whereas the modal verb in (18-b) is deontic (about the possible obligations of a student).

(19) Mogelijk kan minister Brinkhorst voor een andere benadering van
possibly can.SG minister Brinkhorst for DET other approach of
zijn voornemens eens te rade gaan bij zijn collega Zalm.
his plans PART INF advice go PREP his colleague Zalm
'Minister Brinkhorst can maybe consult his colleague Zalm for a different approach to his plans.' (N03.03.06)

As example (19) shows, *mogelijk* can also be used as an adverb. It combines with participant-external *kunnen* in a goal-oriented interpretation.

[11] See in (Nuyts 2004) the discussions of examples (9) p31, (15) p33, (16) and (17) p34, (22)–(26) p36–37, (31) p39, (45) and (46) p44–45 and (49) p45.

(20) Dat kan noodzakelijk zijn om de monografie in 2009 te
DEM can.SG necessary COP in order DET monograph LOC 2009 INF
laten verschijnen.
let appear
That might be necessary in order to publish the monograph in 2009.
(N10.05.06)

Sentence (20) combines the modal verb *kunnen* (may/can) used epistemically (which is quite typival when it is combined with an impersonal demonstrative subject *dat*) with the participant-external adjective *noodzakelijk* (necessary) which gets a goal-oriented modal interpretation (as can be seen from the presence of the 'in order to' complement).

(21) waarschijnlijk moeten de drie voor de jeugdrechter komen.
probably must.PL DET three before DET judge come
'The three [children] probably have to appear before the judge.'
(Nuyts 2004, (19) p34)

(21) combines epistemic *waarschijnlijk* and deontic *moeten*. The sentence expresses the speaker's judgment about a possible obligation for the three children. Nuyts considers that in this case, the source of the obligation is clearly not the speaker himself but another source. The speaker is not the source of the obligation because if he was, he would then use the more informative sentence without 'probably.' This is nicely illustrated by the oddness of sentence (22). The participant-external modal, in this case deontic, expresses the speaker's involvement in the permission by the use of the prepositional phrase *van mij* 'from me.' The oddness of the sentence is due to the incongruity of an epistemic uncertainty about one's own commitments.[12]

(22) ??Misschien mag je van mij gaan.
maybe may.SG 2SG PREP me go
'Maybe, you may go!'

Note that even when the epistemic item is in the (surface) syntactic scope of the participant-external modal, as in example (23), the interpretation still involves the epistemic having scope over the participant-oriented and not the other way around.

(23) Ik moet misschien nog een taalcursusje volgen.
1SG must.SG maybe still DET language.course follow

[12]Example (22) would therefore be less bizarre in a context where the speaker suffers memory loss. Another possible situation where sentence (22) would make sense is one where the question under discussion is "Who allowed me [the hearer] to go?" and where the speaker is not respecting Grice's maxims of quantity: "Maybe" is thus interpreted as "for all you [the hearer] knows, it is possible. . . "

'Maybe I still have to follow a language course.' (N11.09.06)

Finally epistemic adverbs can scope over participant-external adjectives as the following example shows:

(24) Het is plezierig, [...] en misschien zelfs noodzakelijk om
3N COP.3SG pleasant and maybe even necessary PREP
over boeken te praten.
about books INF talk
'It is pleasant, [challenging, ...] and maybe even necessary to talk about books.' (N07.04.05)

One of the conclusions that can be reached from both Nuyts and the newspaper's data is that combinations of epistemic and participant-external items follow the pattern of hypothesis 2.0.1 where the epistemic item is used to express the speaker's judgment about the participant-external one. As Nuyts suggests, combining those items in the other way doesn't seem to be possible:

(25) #Het moet waarschijnlijk zijn dat je naar die veradering gaat.
3N must.SG probable COP that 2SG PREP DEM meeting go.3SG
'It must be probable that you are going to this meeting.'
(Nuyts 2004, (62-c) p50)

Examples involving two modal verbs are quite difficult to find. A possible explanation for this is the existence of two constraints that work in opposite directions. On the one hand the modal verbs often get an epistemic interpretation when used with an impersonal pronoun as subject (see (15-a), or when used in an impersonal construction (15-b)). On the other hand the participant-external modal verbs (mainly the deontic ones: *mogen, hoeven*) usually need a "permissee/obligee" to relate to, i.e. in the terms of (Hengeveld 2004, p1194-95), the modal verbs are mostly participant-oriented whereas the use of an impersonal pronoun favours an event-oriented interpretation. It appears from the data that when a sentence combines two modal verbs and,

1. the subject of the sentence is not impersonal, and
2. one of the two modals is interpreted as participant-external,

then the modal with the wider scope (semantically) is participant-external. (See the following section about combinations of participant-external and internal modals.)

Epistemic and participant-internal

The most common combinations involve epistemic adverbs over the modal verb *kunnen*, as in (26-a), (26-b) and (27). It almost goes without saying that in

all the examples the interpretation gives the epistemic having scope over the participant-internal item.

(26) a. Hij kan waarschijnlijk voorlopig niet spelen.
3m can.SG probably yet NEG play
'He will probably not be able to play soon.' (N23.08.06)

b. Bernard Hinault had zoiets misschien ook
Bernard Hinault have.3SG.PAST such.thing maybe also
gekund.
can.PERF
'Bernard Hinault would maybe also have been capable of such a thing.' (N21.07.06)

c. Spaarbeleg moet dat kunnen berekenen.
Spaarbeleg must.SG DEM can calculate
'Spaarbeleg must be able to calculate that.' (N25.09.01)

The following example shows an epistemic adverb with scope over the lexical construction *in staat zijn om*.

(27) Ono [...] is wellicht in staat de zoekende aanvallers
Ono COP.3SG perhaps PREP condition DET searching strikers
de weg te wijzen.
DET way INF show
'Ono is perhaps able to show the way to the hesitating strikers.'
(V01.09.03)

Finally, I have not found any combination of two modal verbs with an epistemic and a participant-internal interpretation. I think that the same explanation as for participant-external modality holds in this case. Participant-internal modals need an agent as subject and epistemic readings favor an impersonal pronoun as subject: that is not compatible.

Participant-external and participant-internal

The most common combinations involve a goal-oriented necessity modal verb and a participant-internal element. The following example features for instance the verb *moeten* (in a goal-oriented interpretation with an implicit goal of the kind "to do their job well") which takes scope over the lexical construction *in staat zijn om*.

(28) Ze moeten in staat zijn om uit gekleurde informatie
3PL must.PL PREP condition COP PREP from colored information
feiten te halen.
facts INF get

'They [journalists] must be able to extract facts from biased information.' (N21.04.00)

Sentences (29-a) and (29-b) combine respectively a goal-oriented *moeten* and *hoeven* over a participant-internal *kunnen*.

(29) a. Om te kunnen spreken over plagiaat moet je kunnen
in order to can speak PREP plagiarism must.SG 2SG can
vergelijken en moet je dus twee documenten hebben.
compare and must.SG 2SG thus two documents have
'In order to be able to speak of plagiarism, you have to be able to compare and therefore you need two documents.' (N16.03.01)

b. Een gedicht hoef je niet te kunnen begrijpen om
DET poem need.2SG 2SG NEG INF can understand PREP
het mooi te vinden
3N.SG nice INF find
'You don't need to be able to understand a poem to find it beautiful.' (N27.01.01)

Notice that, although I have found no clear-cut example (see (30-a)), I think that it is possible to force a reading with a deontic necessity modal over a participant-internal element.[13] Combinations of participant-external possibility and participant-internal modality are also difficult to find but are more easy to detect as *mogen* is exclusively deontic (see (30-b)).

(30) a. de andere groepjes mogen niet kunnen afluisteren.
DET other groups may.PL NEG can listen
'The other groups are not allowed to be able to listen.'[14]

b. Beginners mogen al kunnen rijden, maar al kun je
beginners may.PL already can ride but even can.SG 2SG
helemaal niet rijden, ben je op het beginnerskamp ook
entirely NEG ride COP.2SG 2SG LOC DET beginer.camp also
welkom.
welcome
'Beginners may already be able to ride, but even if you can not ride at all, you are still welcome at the beginner's camp.'

[13]In particular, the combination seems fine when the ability is to be reached at or before some future time:

(i) Je moet me vóór donderdag kunnen terugbetalen!
2SG must.SG 1SG before Thursday can pay.back
'You must be able to pay me back before Thursday!'

[14]The fragment is part of the explanation of a game.
`http://www.ilo.uva.nl/homepages/gee/docs/HomeostaseHints.doc`

In sentence (30-a), the recipient of the obligation is not the grammatical subject of the sentence but the addressee whereas in (30-b) the recipient of the permission is the grammatical subject.

All in all, the scope hypothesis of 2.0.1 is supported by the Dutch data.

2.2 Fon cluster

In this section, I will present data from two dialects of Fon, Fongbe and Gungbe, that are (mainly) spoken in Benin. According to Capo's (1991, p11-15) classification, Fon is a dialect group of the Gbe cluster. The Gbe cluster consists of five main dialect groups: Vhe, Gen, Ajá, Fon and Phla-Pherá. This cluster corresponds to a group of Kwa languages that are spoken from Ghana to Nigeria. Figure 2.2 is based on (Capo 1991, figure 1 p15) and illustrates the classification of the Fongbe and Gungbe.

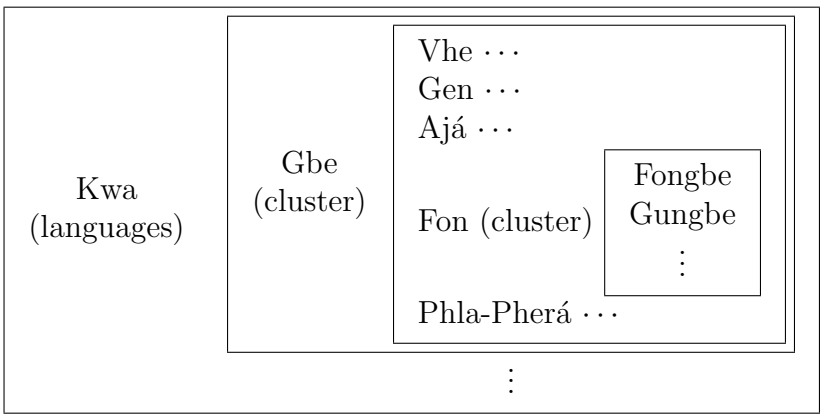

Figure 2.2: Fongbe and Gungbe in the Gbe cluster.

I will use the term 'Fon cluster' as a cover term for the invariant properties of all Fon dialects. I will therefore make an explicit distinction between Gungbe and Fongbe when the grammars of the two diverge on important issues. The discussion will mainly be based on Gungbe data from (Aboh 2004) and (Aboh 2006) and on Fongbe data from (Lefebvre and Brousseau 2002). When examples from other sources are used, I explicitly refer to the dialect used with [F] and [G] signs for Fongbe and Gungbe respectively.

The languages of the Fon cluster are tonal with (at least) two lexical tones, high ´ and low ` , that can be combined to form more complex tones.[15] Some

[15]It is not settled in the literature (as (Lefebvre and Brousseau 2002, p25) mentions) whether the mid tone should be considered a basic tone like the high and low tones or as a complex tone (it is a phonetic variant of raising and falling for (Lefebvre and Brousseau 2002, p20). However it should be noted that all the Gbe languages have at least a three-way distinction between low, mid and high tone (Aboh 2004, p28).

lexical items can only be recognized by their tone as the following pair illustrates (Lefebvre and Brousseau 2002, p20): *gbà* 'to break' (low tone), *gbǎ* 'to build' (rising tone: low-high). The cluster has mainly an SVO word order but it allows for SOV word order, for instance, in nominalised clauses (see (Lefebvre and Brousseau 2002, p5)).

The Fon cluster can be considered an isolating language group in that it has a "poor inflectional morphology" (Aboh 2004, p32).[16] The following facts support this analysis. Firstly, it doesn't express number on the noun, as example (31) shows, and it doesn't express subject-verb agreement for either person, number or gender (Aboh 2004, p32).

(31) a. àmágà àtɔ̀n / àmágà ɔ́
mango three / mango DEF
'three mangos' / 'the mango'
(Lefebvre and Brousseau 2002, p28)

b. àsɔ́n lɛ́ / àsɔ́n ɔ́
crab PL / crab DEF
'the crabs' / 'the crab' (Lefebvre and Brousseau 2002, p39)

Secondly, case is not marked morphologically except for pronouns (Lefebvre and Brousseau 2002, p63).

	+ Nominative	− Nominative
1SG	*ùn*	*mì*
2SG	*à*	*wè*
3SG	*é*	*è*
1PL/2PL	*mí*	*mí*
3PL	*yé*	*yé*

In the Fon cluster, the verb is not inflected for tense, aspect or mood. Instead, the language has a rich set of TAM markers. When a TAM marker is used (their use is optional), it is mandatorily placed between the subject and the verb (if it is a complex TAM marker, its first component is placed between subject and verb). The following table shows some of those markers for Fongbe and Gungbe (based on (Lefebvre and Brousseau 2002, p89) and (Aboh 2004, p158)):[17]

[16]Notice however that it has a quite productive derivational morphology (Lefebvre and Brousseau 2002, p6-7).

[17]It should be noticed that (Lefebvre and Brousseau 2002, p89) and (Lambert-Brétière 2005, p67) have also a marker called the 'indefinite future': *ná-wá*. This complex marker is actually the "combination of *ná*, the definite future marker, and *wá*, which, in isolation, means 'to come"' (Lefebvre and Brousseau 2002, p92). However, there is no broad consensus on its status as a separate TAM marker (for instance (Aboh 2004) doesn't treat it as a TAM marker) and I have trouble determining its meaning from the above-mentioned sources (it is sometimes translated as *eventually*, sometimes as *might*). Furthermore, most examples involving combinations with

		Fongbe	Gungbe
Tense	Anteriority	*kò*	*kó*
Aspect	Habitual	*nɔ̀*	*nɔ̀*
	Imperfective	*ɖò... wɛ̀*	*tò... [`]*
	Prospective	*ɖò... ná... wɛ̀*	*nà... [`]*
Mood	Definite future	*ná*	*ná*
	Subjunctive	*ní*	*ní*

Finally, Gungbe and Fongbe have a preverbal marker for sentential negation *má*.[18] However Fongbe allows also for a sentence-final negative marker *ǎ* that stresses the fact that the speaker "disagrees with the content of the proposition" (Lefebvre and Brousseau 2002, 6.5.3.1 p128). Finally Fon has specialized raising, control and modal verbs.

2.2.1 Fon modal system

Participant-internal modality

Participant-internal	
Modal verbs	Lexical verbs
ɖó-ná	*nyɔ́*
sìxú/sìgán	

The Fon cluster has two ways to express participant-internal modality. First, there are the modal verbs *sìxú/sìgán* and *ɖó-ná*. The first can be used to express ability as example (32) shows, but are also used for participant-external and epistemic modality. Both verbs express the same range of meanings but *sìxú*

TAM markers or modal items, as in (i), are not accepted by my informant (Aboh, pc). I will therefore not try to give an account of *ná-wá*. However, the reader should note that, in view of the analysis of *ná-wá* in (Lefebvre and Brousseau 2002), the combinatorial possibilities of this 'marker' support the overall thesis of this dissertation as the following example shows:

(i) a. Kɔ̀kú ná-wá síxú wá
Koku IND.FUT may come
'Koku may/will have permission to come.'
(Lefebvre and Brousseau 2002, (156) p291)

b. Kɔ̀kú síxú ná-wá wá
Koku IND.FUT may come
'Koku has permission to come in the (far) future.'
(Lefebvre and Brousseau 2002, (157) p291)

When scoping over modal verbs, it can have a *might*-reading as in (i-a); when scoping under a modal verb, it only has an indefinite-future reading as in (i-b).

[18]Lefebvre and Brousseau (2002, 6.4 p120) represents the marker with low tone *mà* whereas Aboh (2004, 43–46) uses the high tone version, *má*.

is preferred by Fongbe speakers whereas *sìgán* is preferred by Gungbe speakers (Aboh, pc).[19]

(32) a. Kɔ̀kú sìgán yì
Koku can leave
'Koku can leave.' (Lefebvre and Brousseau 2002, (162) p292)

b. Kɔ̀kú sìgán ɖú wè
Koku can dance dance
'Koku can dance.' [G] (Aboh, pc)

The modal verbs can be used to express ability in the past as in the following example:

(33) Kɔ̀kú kò sìgán yì
Koku ANT can leave
'Koku could have left.' (Lefebvre and Brousseau 2002, (163) p292)

The negation marker *mà* always precedes the modal verb to yield a 'not able to' scope.

(34) a. ní pɔ̀npì lɔ́ tò kùnkùn lê, mí má sìgǎn wà àzɔ́n lɔ́
if tap this IMPF run-run this.way.NLR 2PL NEG can do job this
'If this tap keeps running this way, you cannot do the job.'
(Aboh 2004, (41b) p176)

b. #Kɔ̀kú sìgán mà yì
Koku can NEG leave
(Lefebvre and Brousseau 2002, (169-b) p293)

Notice that the incapacity for the subjects/agents of the main clause in (34-a) is not due to their intrinsic competence (i.e. internal) but to some external factor (the tap keeps running). That is, participant-internal ability might depend on participant-external circumstances. Finally the modal verb *ɖó-ná* can be used to express participant-internal necessity (involving a lack of control by the participant) as in (35).

(35) ùn ɖó-ná xu ado
1SG must reject/dry urine
'I have to pee.' [G] (Aboh, pc)

The second strategy in the Fon cluster for participant-internal modality uses the verb *nyɔ́* 'to know, to be good.' It expresses learned ability and combines in a transparent way with negation:

[19]The Fongbe example (32-a) shows that this is only a preference.

(36) a. yé nyɔ́n wè ɖú
3PL know.PERF dance dance
'They can dance / they know how to dance.'
(Aboh 2004, (ii-e) p341)

b. yé mà nyɔ́n wè ɖú
3PL NEG know.PERF dance dance
'They can't dance / they don't know how to dance.' [G] (Aboh, pc)

Participant-external modality

A quite surprising fact about participant-external modality in the Fon cluster is that there are no prominent lexical items (verbs, adjectives or noun-verb combinations). The following elements can be used instead: a mood marker, modal verbs and an adverb.

	Participant-external	
	Deontic	Goal-oriented
Mood marker	*ní*	
Modal verbs	*ɖó-ná*	*ɖó-ná*
	sìxú/sìgán	*sìxú/sìgán*
Adverb	*dàndàn*	

Mood marker *ní* The injunctive/subjunctive mood marker *ní* is used to express obligation (Lefebvre and Brousseau 2002, p93) (Aboh 2004, 5.3.3 p180) but it can also be used in (exhortative) wishes and for orders in imperative constructions (Lefebvre and Brousseau 2002, p93).[20]

(37) a. Bàyí ní ɖà wɔ́
Bayi ní prepare dough
'Bayi must prepare dough.'
(Lefebvre and Brousseau 2002, (21b) p93)

b. Kòfí ní jì hàn
Kofi ní sing song
'Kofi should sing a song.' (Aboh 2004, (47b) p181)

The mood marker *ní* is not allowed in goal-oriented sentences whether they are formed with a want-conditional as (38-a) or with a purpose clause as (38-b).[21]

[20]This marker is even more versatile as it can also work as conjunction (Aboh 2004, 5.3.1). It is then quite similar to the English conditional marker *if* (Aboh 2004, p176) as can be seen in example (47-a).

[21]This judgment was obtained with sentences where the choice of the modal element was offered (either *ní* or the necessity modal *ɖó-ná*). The marker *ní* was explicitly refused in those sentences for the goal-oriented interpretation.

(38) [G] (Aboh, pc)

a. #Nú à jló ná wà àzɔ́ ɔ́, à ní yì Kùtɔ́nû
COMP 2SG want DEF.FUT do work DEF 2SG have.to go Cotonou
'If you want to work, you have to go to Cotonou.'

b. #À ní dó àkwɛ́ bó (ḍó) ná yì tó mɛ̀
2SG have.to have money in.order.to go country in
'You must have some money in order to travel.'

I will assume that the scope order of the mood marker *ní* with the negation *mà* is fixed and transparent for both Fongbe and Gungbe. The mood marker can precede the negation but the reverse order is not grammatical as examples (39-b) and (40-b) attest respectively:[22]

(39) [F] (Avolonto 1992, p32)

a. Kɔ̀kú ní má dó gbàdé ó
Koku ní NEG sow corn INS
'Koku must not sow corn.'

b. #Kɔ̀kú má ní dó gbàdé ó
Koku NEG ní sow corn INS

(40) (Aboh 2004, (49b-c) p181-182)

a. Àsíbá ní má wá blô
Asiba ní NEG come anymore
'Asiba should not come.'

b. #Àsíbá má ní wá blô
Asiba NEG ní come anymore

Notice that the examples (39-a) and (40-a) both feature a final particle: the insistence particle (Lefebvre and Brousseau 2002, p130-131) *ó* in (39-a) and the particle *blô* in (40-a). According to Aboh (pc), the combination *ní má* ... PARTis the standard negative imperative form (for third person singular subjects) and the final particle is necessary. As the examples of (Avolonto 1992, p32) also contain a particle, I will assume that both Gungbe and Fongbe need such a particle,

[22]The analysis of (Lefebvre and Brousseau 2002, p100) is different. Not all of their informants accept the combination of *ní* with *má*, but when they do, they consider both the following orders grammatical.

(i) (Lefebvre and Brousseau 2002, (42a-b) p100)

a. Bàyí ní mà ḍà wɔ́
Bayi ní NEG prepare dough
'Bayi should not prepare dough.'

b. Bàyí mà ní ḍà wɔ́
Bayi NEG ní prepare dough
'Bayi does not have to prepare dough.'

The surface scope also determines the interpretation in the straightforward way.

contra example (i-a) of footnote 22. This does not mean that the mood marker *ní* should be seen as an imperative marker (it can for instance be used in questions and under verbs of saying and its predicate can be modified for aspect).

Finally *ní* can occur with the anteriority marker/adverbial *kò* in its scope.[23]

(41) Sìká ní kò ɖà wɔ̀
Sika ní already prepare dough
'Sika must have prepared dough.'
(Lefebvre and Brousseau 2002, (56a) p105)

Modal verbs Three modal verbs can be used to express participant-external modality: *ɖó-ná*, and *sìgán/sìxú*. The modal verb *ɖó-ná*[24] expresses all the different notions of participant-external necessity: deontic in (42), goal-oriented in (43).

(42) a. Ví lɛ́ bí ɖó-ná wá
childPL all have.to come
'All the children have to come.'
(Lefebvre and Brousseau 2002, (143) p288)

b. A ɖó ná nyá àvɔ élɔ...
2SG have.to wash.cloth DEM
'You have to wash this cloth...'
[F] (Wekenon Tokponto 2002, 6 p90)

(43) a. À ɖó-ná dín àkwɛ́ bó (ɖò) ná yì tó mɛ̀
2SG have.to search money in.order.to go country in
'You have to find money in order to travel.' [G] (Aboh, pc)[25]

b. Nú à jló ná yì tó mɛ̀ ɔ́, à ɖó-ná dó
COMP 2SG want DEF.FUT go country in DEF 2SG have.to have
àkwɛ́
money
'If you want to travel, you must have enough money.'
[F] (Aboh, pc)

[23] According to (Lefebvre and Brousseau 2002, (68) p107), the reverse combination is accepted by some speakers (with a minimal difference in meaning). However, Aboh (pc) doesn't accept this order of TAM markers for Fongbe or Gungbe.

[24] According to Lefebvre and Brousseau (2002, p288), it is "the combination of *ɖó* 'to have' and *ná*, the definite future marker." However, as Aboh (pc) pointed out to me, the *ná* part of the modal could well have a different origin. In particular, it is not only used as a future marker, but also in the prospective construction, as a preposition and as a verb *ná* 'to give.'

[25] Notice that the purposive construction is introduced either by *bó ná*, as in (Lefebvre and Brousseau 2002, p174), or by *bó ɖò ná* (Aboh, pc). The first combinations is a contraction of the second which combines the (same subject) clausal conjunction *bó* and the modal verb *ɖó-ná*.

The meaning of *ɖó-ná* is best understood when contrasted with the meaning of *ní*. The modal verb is then stronger than the mood marker:

(44) a. Bàyí ɖó-ná ɖà wɔ́
Bayi have.to prepare dough
'Bayi must prepare dough.' [F] (Aboh, pc)

b. Bàyí ní ɖà wɔ́
Bayi ní prepare dough
'Bayi should prepare dough.' [F] (sentence (37-a))

However, this does not mean that *ɖó-ná* has necessarily to be translated as 'must' as the following example makes clear.

(45) Kofi talks on the phone with his mother who would like to visit him although she is very tired. He says:

a. À má ɖó-ná wá...
2SG NEG have.to come
'You must/should not come.' [G] (Aboh, pc)

b. àmɔ à sìgán wá ní à jló
but 2SG can come COMP 2SG want
'but you can if you want to.' [G] (Aboh, pc)

First notice that, if the modal in sentence (45-a) is interpreted as deontic 'must', the utterance of sentence (45-b) should be extremely odd. The second sentence is however possible in this context and this favors an interpretation as 'should.' The interpretation of (45-a) and (45-b) goes roughly as follows: with (45-a), the speaker expresses his opinion that it would be better that his mother doesn't come but (45-b) adds that this choice is hers. Figure 2.3 is an attempt to represent the contrast in meaning between *ní* and *ɖó-ná*. I will assume that the precise

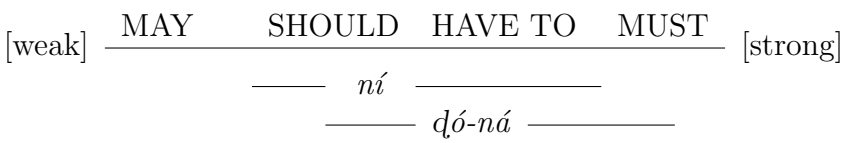

Figure 2.3: Fongbe participant-external necessity modals on a scale from weak to strong

interpretation of those two items is context dependent. For instance in the context of example (45), it seems that the mother/son relation has the effect of forcing a soft interpretation of *ɖó-ná*. If Kofi actually wants to order his mother not to come he would either have to use an imperative construction or to add the deontic modal adverb *dàndàn* to (45-a).

The modal combines with both types of negations *má* and *ǎ*. In both (46-a)[26] and (46-b), the negation is interpreted as having scope under the modal verb, i.e. as '*must not.*'[27] Sentence (46-c) shows that the negation is not allowed in the scope of the modal.

(46) a. Xwè ɖě é ɖó dìn, Àsíbá má ɖó-na ɖà làn
age REL 3SG have now Asiba NEG have.to cook meat
'Taking into account her age, Asiba must/should not cook meat.'
[G] (Aboh, pc)

b. A kà ɖó ná nyá àvɔ ɔ ɖò xwégbe á.
2SG but have.to wash.clothes DEF at home NEG
'But you must not wash this cloth at home.'
[F] (Wekenon Tokponto 2002, 6 p90)

c. #Kɔ̀kú ɖó-ná má wá
Koku have.to NEG come
(Lefebvre and Brousseau 2002, (151b) p290)

The modal verbs *sìgán* and *sìxú* also have a participant-external modality interpretation. First, *sìgán* is interpreted deontically in sentence (47-a) and (47-c), whereas it has a goal-oriented interpretation in (47-b).

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[26]This example is adapted from (Aboh 2006, (33b) here as (i-a)) which shows that contrary to *ní*, *ɖó-ná* can be in the scope of the anteriority marker *kó*:

(i) a. Xwè ɖě é ɖó dìn, Àsíbá má kò ɖó-na nɔ̀ ɖà làn
age REL 3SG have now Asiba NEG ANT have.to Hab cook meat
'Taking into account her age, Asiba must not have been allowed to cook meat yet.'
[G]

b. Kɔ̀kú kò ɖó-ná wá
Koku ANT have.to come
'Koku had to come.' (Lefebvre and Brousseau 2002, (147) p289)

However, the precise effect of the anteriority marker on the modal verb is difficult to determine as becomes obvious from the contrast of translations between (i-a) and (i-b).

[27]The combinations of (Lefebvre and Brousseau 2002) don't fit with the analysis proposed here. Sentence (i-b) and (i-b) convey the meaning 'not have to.'

(i) a. Kɔ̀kú má ɖó-ná wá
Koku NEG have.to come
'Koku does not have to come.' (Lefebvre and Brousseau 2002, (151a) p290)

b. Kɔ̀kú ɖó-ná wá ǎ
Koku have.to come NEG
'It is not the case that Koku must come.'
(Lefebvre and Brousseau 2002, (152) p290)

Obviously, both interpretations should not easily coexist within one language as one form, NEG MOD, could be interpreted as 'must not' and 'not have to' (I will assume that 'must not' is the standard and only interpretation possible).

(47) a. Ní é jló è, Kɔ̀kú sìgán yì
if 3SG want DEF.DET Koku can leave
Koku can leave if he wants to. [G] (Aboh, pc)

b. Nú à jló ná wà àzɔ́ ɔ́, à sìgán yì Kùtɔ́nû
COMP 2SG want DEF do work DEF 2SG can go Cotonou
'If you want to work, you can go to Cotonou.' [F] (Aboh, pc)

c. (Ní é jló,) Kɔ̀kú sìgán gɔ̀n àzɔ́n wà
COMP 3SG want Koku can abstain work do
'Koku may not work (if he wants to).' [G] (Aboh, p.c.)

Lefebvre and Brousseau (2002, p292) say that it "may be assigned a deontic (capacity) [...] reading." This could seem to be at odds with the analysis of *sìgán* as an all-round participant-external and -internal modality. I think however that, in this case, the difference is merely a matter of definitions. First notice that capacity is not a deontic notion in the sense of permission and obligations. Therefore the term 'deontic' in (Lefebvre and Brousseau 2002) seems to cover the whole participant-internal and external range ('root' modality). In this dissertation, capacity can be participant-internal (see (32-a)) as well as participant-external in goal-oriented sentences. Sentence (47-b), for instance, is an example of a capacity use of the modal verb *sìgán* in a goal-oriented sentence.

The negation marker must precede the modal verb, as in (34-a) for participant-internal modality. The interpretation follows straightforwardly from this word order and results in an English translation as 'cannot/not allowed.' It is possible to obtain an interpretation with the modal having scope above the 'negation' by using the verb *gɔ̀n* (meaning 'to abstain') as in sentence (47-c).

Finally the modal verb *sìxú* behaves in the exact same way as *sìgán* with respect to negation and other TAM markers. It has a deontic possibility interpretation, as in sentences (48-a) and (48-b), but also goal-oriented possibility as in sentence (48-c).

(48) a. Kɔ̀kú sìxú wá
Koku may come
'Koku may come.' (Lefebvre and Brousseau 2002, (153) p290)

b. Kɔ̀kú ná sìxú wá
Koku DEF.FUT may come
'Koku will have permission to come.'
(Lefebvre and Brousseau 2002, (156) p291)

c. Nú à jló ná wà àzɔ́ ɔ́, à sìxú yì Kùtɔ́nû
COMP 2SG want DEF.FUT do work DEF 2SG can go Cotonou
'If you want to work, you can go to Cotonou.' [F] (Aboh, pc)

Adverbs The modal adverb *dàndàn* 'necessarily, obligatorily' supports a deontic interpretation when it is combined with the modal verb *ɖó-ná*, as in the

following example.

(49) Àsi àtɔngɔ ɖèè a dà ɔ, mì ɖó ná túùn fíɖèè é
woman third REL 2SG marry DEF 1PL have.to know side 3SG
gósín ɔ dándán ...
come.from DEF necessarily
'Concerning the third woman you married, we must (necessarily) be told where she comes from.' [F] (Wekenon Tokponto 2002, 8 p108)

Although sentences with *dàndàn* do not necessitate the presence of the modal verb, it seems to be a sure way to force a strong deontic necessity interpretation as in (47-c).

A characteristic of the adverb *dándán* is that it marks the authority of the speaker (Aboh, pc). As sentence (50) shows, it doesn't embed under verbs of saying. By using *dándán*, the speaker marks emphatically that, on his authority, the embedded proposition is not open for discussion.

(50) Kɔ̀kú ɖɔ̀ ɖɔ̀ Àsíbá wá dándán
Koku say that Asiba come necessarily
'Koku DID say that Asiba came.' [G] (Aboh, pc)

Modal recipient The subject of a participant-external modal sentence is not necessarily the recipient of the obligation or permission (in the deontic case). For instance, the obligation in sentences (51-a) and (51-b) is not directed to Koku or to the students. This is true with the mood marker and with modal verbs but also with the adverb *dándán* as in (49).

(51) The dean and a secretary prepare the list of participants for a conference. The dean says:

a. Kɔ̀kú ní mà wá ó!
Koku ní NEG come INS
'Koku must not come!' [G] (Aboh, pc)

b. Wéxɔ̀mɛ̀ví lɛ́ bí ɖó-ná wá
student.PL all have.to come
'All the students have to come.' [G] (Aboh, pc)

What the dean means is that the secretary has to ensure that (51-a) and (51-b) happen. The following sentences combine a modal verb and a resultative state VP.

(52) a. Hɔ̀n ɔ́ ɖó-ná ɖɔ̀ súsú.
door DEF have.to be.at close.close
'The door must be closed.' [G] (Aboh, pc)

b. Hɔ̀n ɔ́ sìgán nɔ̀ súsú.
door DEF can/may remain close.close
'The door can/may be closed.' [G] (Aboh, pc)

Obviously, doors are not the bearers of obligations or permissions. Therefore, the obligation and permission in sentences (52-a) and (52-b) are meant for agents external to the sentence.

Epistemic modality

Adverbs and modal verbs are the two main ways to express epistemic modality, although we will see that the mood marker *ná* can also get an epistemic interpretation in certain contexts (see example (57-b)).

Epistemic	
Modal verbs	Adverbs
ɖó-ná	*dódó*
sìxú/sìgán	*bɔ̀yà*

Modal verbs All three modal verbs have an epistemic interpretation along with their participant-external one. As should be expected, the two modals *sìgán* and *sìxú* have an epistemic possibility interpretation whereas *ɖó-ná* gets a necessity reading. The following examples involve *sìgán*:

(53) a. Kɔ̀kú sìgán kò yì
Koku can already leave
'Koku may have left already.'
(Lefebvre and Brousseau 2002, (164) p292)

b. É sìgán wá fɔn fɛ̀ɛ̀
3SG can come stand PART
'He might finally stand up (at some point).' [G] (Aboh, p.c.)

The modal verb *sìxú* has an epistemic interpretation in the following examples:

(54) a. Kɔ̀kú sìxú wá
Koku may come
'Koku has possibly arrived.'
(Lefebvre and Brousseau 2002, (153b) p290)

b. Kɔ̀kú kò sìxú wá
Koku ANT may come
'Koku might have come.'
(Lefebvre and Brousseau 2002, (154a) p290)

Finally, although (Lefebvre and Brousseau 2002, p288) suggests that *ɖó-ná* is "essentially deontic," the following example and sentence (66-a) have an epistemic

interpretation.

(55) Tóóló kpoún ɔ yé lìn ɖɔ̀ mɛ̀ɖé ɖó ná nɔ̀ nɔ̀ xwé ɔ́ gbè
right.away 3PL think COMP person have.to live house DEF in
'Immediately they thought that someone must be living in the house.'
[F] (Wekenon Tokponto 2002, 4 p111)

Notice that *ɖó-ná* needs not to be embedded under a belief attribution to express epistemic modality.

Adverbs The two adverbs, *bɔ́yà* and *dódó*, are "speaker oriented modal adverbs" (Lefebvre and Brousseau 2002, p383).[28] Firstly, the adverb *bɔ́yà* means 'perhaps, maybe' and has the special property of occurring clause-initially as sentence (56-a) shows (unlike the vast majority of adverbs that only occur clause-finally). The epistemic possibility adverb has a sentence final counterpart *vlàfò* (see sentence (59-b)). Secondly, the adverb *dódó* means 'certainly' and is only used in sentence final position as sentence (56-b) exemplifies.

(56) a. Bɔ́yà Kɔ̀kú yì Kùtɔ́nû
Koku go.PERF Cotonou maybe
'Maybe Koku has gone to Cotonou.' [G] (Aboh, pc)
b. Kɔ̀kú yì Kùtɔ́nû dódó
Koku go.PERF Cotonou certainly
'Koku has certainly gone to Cotonou.' [G] (Aboh, pc)

The necessity adverb is felt to be quite similar to *dándán* (Aboh, pc). However, whereas *dándán* marks the authority of the speaker, *dódó* involves his authority based on his knowledge.

Conclusion

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Mood marker		*ní*		(*ná*)
Adverb		*dàndàn*		*dódó*
				bɔ́yà
Modal verbs	*ɖó-ná*	*ɖó-ná*	*ɖó-ná*	*ɖó-ná*
	sìxú/sìgán	*sìxú/sìgán*	*sìxú/sìgán*	*sìxú/sìgán*
Lexical verbs	*nyɔ́*			

The modal system of the Fon cluster is based on a set of modal verbs, adverbs and mood markers. An important characteristic that can be brought forward is that

[28] The participant-external adverb *dándán* is also a speaker oriented modal adverb (Lefebvre and Brousseau 2002, p383).

the verbs are polyfunctional in the sense of (van der Auwera, Ammann and Kindt 2005), that is, they can express different meanings: participant-external/internal and epistemic modality. On the other hand, the interpretation of the mood marker *ní* and of the modal adverbs seems to be circumscribed to one and only one category. For instance, the interpretation range of *ní* is a subset of participant-external modality (excluding goal-oriented uses).

The combination of the modal verbs and the mood marker *ní* with negation deserves further investigation. In particular, the important disagreement between the analysis proposed here and (Lefebvre and Brousseau 2002) needs to be settled by testing thoroughly a broad range of native speakers from different dialects (which is at this point unfortunately not feasible for me).[29]

2.2.2 Combinations of modal items

Epistemic and participant-internal

The first set of combinations involves the verb *nyɔ́* with the modal verbs in (57-a) and (66-a) and the mood marker for futurity *ná* in (57-b). The force of the epistemic judgment goes from possibility in (57-a), to good probability in (57-b) and to epistemic certainty in (57-c).

(57) a. É sìgán/sìxú nyɔ́n tɔ̀ lɛ̀
3SG can know.PERF river clean
'He might be able to swim.' [G/F] (Aboh, p.c.)

b. É ná nyɔ́n tɔ̀ lɛ̀ (fɛ̀ɛ̀)
3SG FUT know.PERF river clean PART
'He should be able to swim / he certainly knows how to swim'
[G] (Aboh, p.c.)

[29] If we represent the relevant information in a clause structure as in (Aboh 2004), the comparison between the pros and cons of the two analysis becomes easier:

$$[_{\text{Fin}^{\circ}}\ \text{ní}_{\text{mood}}\ [_{\text{Neg}^{\circ}}\ \text{má}\ [_{\text{TP}}\ [_{\text{T}^{\circ}}\ \text{ná}\ [_{\text{MoodP}}\ \begin{matrix}\text{ḍó-ná}\\ \text{sìgán}\\ \text{sìxú}\end{matrix}\ [_{\text{Asp}^{\circ}1}\ \text{nɔ̀}]]]]]]$$

This clause structure represents the relative surface position of grammatical items extrapolated from sentences in (Lefebvre and Brousseau 2002), (Aboh 2004) and (Aboh 2006). The scope information is transparent from left to right. This structure predicts, for instance, that the negation is interpreted over the modal verbs.

The analysis of (Lefebvre and Brousseau 2002) is formally appealing because its scope properties are transparent and uniform for the modal verbs, i.e. negation > modal. However, (Lefebvre and Brousseau 2002) provides many more combinations than this structure can account for. For instance, the negation *má* could also have scope over the mood marker *ní* or the definite future *ná* could scope under *sìxú* but not the other two modal verbs.

My analysis allows less combinations and fits this structure well but is still problematic when it come to the modal *ḍó-ná* which is interpreted above the negation like a mood marker.

c. É ɖó-ná nyɔ́n tɔ̀ lɛ̀
3SG have.to know.PERF river clean
'He must be able to swim.' [G] (Aboh, p.c.)

As can be expected, the modal verb *sìgán* in sentence (57-a) cannot be interpreted as participant-internal and gets here an epistemic interpretation. Furthermore *nyɔ̀* cannot take a modal verb as argument.

All epistemic adverbs can be combined with participant-internal *nyɔ̀* but only the epistemic possibility adverbs combine with *sìgán* (and therefore with *sìxú*), as is shown in (58) and (59) respectively.

(58) a. Bɔ́yà é nyɔ́n tɔ̀ lɛ̀
maybe 3SG know.PERF river clean
'Maybe he is able to swim.' [G] (Aboh, pc)

b. É nyɔ́n tɔ̀ lɛ̀ dódó
3SG know.PERF river clean certainly
'He certainly is able to swim.' [G] (Aboh, pc)

(59) a. Bɔ́yà é sìgán ɖú wè
maybe 3SG can dance dance
'Maybe he can dance.' [G] (Aboh, pc)

b. Ní Kòfí jì hàn, é sìgán mo kwè vlàfò
if Kofi sing song 3SG can find money maybe
'If Kofi sings, he might be able to obtain some money.'
[G] (Aboh, p.c.)

c. #É sìgán ɖú wè dódó
3SG can dance dance certainly
[G] (Aboh, pc)

Notice that in sentence (59-b), the interpretation of *sìgán* is participant-internal as in (34-a) and the epistemic possibility adverb occurs sentence-finally. However, the adverb *vlàfò* behaves more like a parenthetical and has actually the whole sentence in its scope (conditional antecedent included).[30] From the rejection of sentence (59-c), I will thus conclude that *sìgán* (and *sìxú*) cannot occur with sentence final modal adverbs.

Finally, the combination of sentence (60-a) is not ruled out by my informant (Aboh, pc), although it is somehow marked as not completely grammatical, whereas sentence (60-b) is clearly rejected.

[30]Sentence (59-b) was obtained while trying to elicit a combination of the epistemic adverb with a goal-oriented modal as in the following sentence,

(i) Maybe John should sing to get some money.

Although the sentences are not equivalent (despite their very similar meanings), it is obvious that the modal adverb was meant to have scope over the whole sentence.

(60) a. ?É ɖó-ná sìgán xɔ̀ wěmà élɔ̀
3SG must can buy paper DEM
'He must be able to buy this book.' [G] (Aboh, pc)
b. #É sìgán ɖó-ná xɔ̀ wěmà élɔ̀
3SG can must buy paper DEM
[G] (Aboh, pc)

Most examples (here and in the following sections) are from Gungbe. It is therefore necessary to be cautious with the conclusion: we can conclude that in Gungbe, epistemic modality always has scope over participant-internal modality, just as expected. Furthermore, I expect this conclusion to be valid for the whole Fon cluster.

Epistemic and participant-external

Lefebvre and Brousseau (2002, p382 & 394) mention that "more than one [non-modal] clause final adverb may occur at the end of the sentence." Their preliminary data on co-occurences suggests that the adverbs follow the mirror image order of adverbs in (Cinque 1999). This suggests that the scope order 'SVO bɔ́yà dándán' with a deontic adverb over an epistemic one should be impossible which is born out. More interestingly the scope order 'epistemic over deontic' is also impossible.

(61) #Bɔ́yà Kòfí yì Kùtɔ́nû dándán
maybe Kofi go Cotonou necessarily
[G] (Aboh, pc)

I assume that the sentence initial adverb has scope over the whole sentence, that is, the sentence final version of (61) would be 'SVO dándán bɔ́yà.' The reason for this ungrammaticality is surely the speaker-orientedness of both adverbs. Both adverbs express an attitude of the speaker, *bɔ́yà* uncertainty and *dándán* speaker's authority, and these two attitudes cannot be combined within one sentence.

As can be seen in example (62), the epistemic possibility adverb *bɔ́yà* can combine with all modal verbs (in their participant-external interpretation). Sentences (62-a) and (62-b) have respectively the necessity modal verb *ɖó-ná* and the possibility verb *sìxú* in their deontic interpretation, whereas sentence (62-c) exemplifies a goal-oriented modal verb under the adverb.

(62) a. Bɔ́yà é ɖó-ná yì Kùtɔ́nû
maybe 3SG must go Cotonou
'Maybe he has to go to Cotonou.' [F] (Aboh, pc)
b. Bɔ́yà é sìxú yì Kùtɔ́nû
maybe 3SG may go Cotonou
'Maybe he is allowed to go to Cotonou.' [F] (Aboh, pc)

c. Bɔ́yà é ɖó-ná yì Kútɔ́nû bó-ná wà àzɔ́
maybe 3SG have.to go Cotonou in.order.to do work
'Maybe he has to go to Cotonou in order to work.' [F] (Aboh, pc)

The data for the epistemic necessity adverb *dódó* in example (63) are less clear-cut, in particular because sentence final *dódó* doesn't combine with *sìgán* or *sìxú*. However, the participant-external necessity modal *ɖó-ná* does combine with *dódó* and the adverb has semantic scope over the modal verb.[31]

(63) a. É ɖó-ná yì Kùtɔ́nû dódó
3SG must go Cotonou certainly
'He must certainly go to Cotonou.' [G] (Aboh, pc)
b. #É sìgán/sìxú yì Kùtɔ́nû dódó
3SG can/may go Cotonou certainly
[G/F] (Aboh, pc)

Whatever the reason for the ungrammaticality of sentence (63-b) is, the main point remains that the participant-external modal verbs cannot scope over the epistemic modal adverb. Finally the modal adverbs cannot combine with the mood marker *ní*:

(64) #Bɔ́yà é ní jì hàn
maybe 3SG ní sing song
[G] (Aboh, pc)

Furthermore, the mood marker *ní* cannot precede any of the modal verbs and it also cannot occur in their scope.

The modal verb *ɖó-ná* can combine with the possibility modals in their deontic interpretation but the same remark as for (60-a) holds, i.e. this is not judged entirely grammatical.

(65) ?É ɖó-ná sìxú xɔ̀ wěmà élɔ̀
3SG must may buy paper DEM .
'He must be allowed to buy this book.' [F] (Aboh, pc)

We can conclude from this data that all the sensible combinations of epistemic and participant-external modals yield the expected scope order, i.e. Epistemic > Participant-external. However, the mood marker doesn't exhibit any combinatorial possibilities. I think that the main reason for this fact is that *ní* always involves the speaker's judgment (order, advice from the speaker) and thus does not combine well with epistemic modality.

[31] Unfortunately, I have no explanation for this behavior. From the scope properties of *ɖó-ná* with respect to negation, we would expect that it is higher than *sìgán* in the scope hierarchy. Therefore, as *dódó* cannot scope over *sìgán*, I would expect it not to be able to scope over *ɖó-ná*.

Participant-external and participant-internal

The participant-external modal verbs *ɖó-ná* and *sìxú* can be combined with the lexical verb *nyɔ́* as in (66-a).

(66) a. Yè ɖǒ nǎ nyɔ̌ gbè mɛ̀ tɔ̀n wlǎn
3SG have.to be.good language person GEN write
'One must be able to write one's own language.'
[F] (Lambert-Brétière 2005, (77a) p71)

b. É sìxú nyɔ́n wè ɖú
3SG may know.PERF dance dance
'He is allowed to be able to dance!'[32] [F] (Aboh, pc)

The combinations of modal verbs are constrained in the same way as in example (65), that is, a participant-internal interpretation of the possibility modal (instead of a participant-external one) does not change the judgment on this sentence.

(67) ?É ɖó-ná sìgán ɖú wè
3SG must can dance dance
'He must be able to dance!' [G] (Aboh, pc)

We have seen in examples (59-c) and (63-b) that *sìgán* and *sìxú* do not allow the sentence final epistemic adverb *dódó*. This is also the case with the deontic necessity adverb *dándán*.

(68) #Kòfí sìgán yì Kùtɔ́nû dándán
Kofi can go Cotonou necessarily
[G] (Aboh, pc)

Finally, we have already seen that the mood marker cannot combine with the modal verbs. This holds whatever their interpretation is and therefore, the *ní* equivalent of sentence (67) is not grammatical either. However it is fine with the lexical verb *nyɔ́*:

(69) É ní nyɔ́n wè ɖú hwɛ́có má gɔ̀
3SG must know.PERF dance dance before 1SG.FUT come.back
'He must be able to dance before I come back!' [G] (Aboh, pc)

We can therefore conclude that the modal elements of Fon respect the scope order: Epistemic > Participant-external > Participant-internal.

[32]Notice however that it is difficult to find a context where sentence (66-b) actually makes sense.

2.3 Korean

The Korean language is spoken by approximatively by 75 million people including 5 million overseas Koreans. Its genetic relation to other languages is controversial. The older theory included Korean into the Altaic family but decisive arguments have been lacking, opening the way for the more recent opinion that Korean is an independent language, but in a zone of intensive language contact which would explain its close relationship to Japanese. I will adopt the second hypothesis as it also conveniently places Korean in a different phylum from the Altaic phylum including Turkish.

The phonology of the Korean language is obviously not the topic of this dissertation but its morphology is quite important. The main characteristic of Korean morphology is that it is agglutinative. For instance, nominals and verbal stems are assigned suffixes through derivational rules.

Furthermore, there is no agreement for person, number or gender but a rich system of honorific suffixes is used. Korean verbs have seven morphological slots, (Wymann 1996b, p31):

(28) $[[\text{X}]_{\text{V}} + \text{Honorific} + \text{Tense} + \text{Aspect}_1 + \text{Modal} + \text{Aspect}_2 + \text{Mood}]_{\text{V}}$

Syntactically, Korean is a strict verb-final language (leaning towards SOV but with an almost free word order) and the verb is the only mandatory element of finite clauses. Modifiers must precede their head noun. The language has a nominative-accusative case system but is better characterized as a topic-prominent language. Finally, I will organize the example glosses as follows:

(70) Transcription.
Gloss.
English translation.
Original Korean example.

For the transcriptions, I will follow Wymann (1996b) and use the Yale system for consonants and the McCune-Reischauer system for vowels. In this section, all the examples without explicit references to their origin have been checked with my informants.

2.3.1 Korean modal system

Participant-internal modality

Wymann (1996b) uses a notion of dynamic modality quite similar to the participant-oriented notion of (Hengeveld 2004). There are two subtypes of dynamic modality (Wymann 1996b, p20): "a) possible internal capability which implies an environmental or contextual constraint, and b) possible internal knowledge or acquired

capability.'' I will call the first type circumstantial ability and the second one internal (or acquired).[33]

	Participant-internal	
	Internal/Acquired	Circumstantial
Auxiliary verbs	*mosha*	*mosha*
Lexical constructions	*cul + alta/molŭta*	*su + issta/ŏpsta*
(Noun + Verb)		*nŭnglyŏk + issta/ŏpsta*
Suffix constructions	*-ya hata*	*-ya hata*

Auxiliary verb The auxiliary verb 못하 *mosha* expresses ''inability or incapacity on the part of the subject if the subject is represented by an animate noun, especially a personal pronoun or nouns'' (Lee 1989, p137) (it can also express regret on the part of the speaker).

(71) a. kŭkcang-e ka-ci mosha-nta
theater-LOC go-NLR not:able-VSFX
'[She] cannot go to the theatre.' (Lee 1989, 5.2.1.1.2.3.1.4.2 p137)
극장에 가지 못한다.

b. kŭ-nŭn uncŏn-ŭl mosha-nta
3SG-TOP drive-A:FUT not:able-VSFX
'He is not able to drive.'
그는 운전을 못한다

Sentence (71-a) is most likely circumstantial whereas (71-b) is internal (in this case acquired capability).

Lexical constructions To express internal and acquired capability, the Korean language has a construction combining the noun 줄 *cul* (expressing the notion of know-how) with one of the verbs 알다 *alta* (to know) and 모르다 *molŭta* (the lexicalized negated form of the verb to know).

(72) a. kŭ sŏnsaeng-nim-ŭn hankukmal-ŭl ha-l
that teacher-PRES-TOP Korean:language-ACC speak-A:FUT
cul-ŭl a-sipnita
know:how-ACC know-VSFX
'That teacher speaks Korean.' (Wymann 1996b, (198) p178)
그 선생님은 한국말을 할 줄을 아십니다.

b. heŏmchi-l cul-ŭl al-ko iss-ŏyo
swim-A:FUT know:how-ACC know-SFX exist-VSFX

[33]The following table does not exhaust the modal elements presented in this section (in particular for the Noun + Verb combinations).

'(I) can swim.' (Wymann 1996b, (199) p179)
헤엄칠 줄을 알고 있어요.

Sentence (72-a) is ambiguous between an internal and acquired reading (Wymann 1996b, p178), the context usually resolving the ambiguity. In this example, we might for instance know more about the teacher: the teacher is Korean and therefore has the internal ability to speak the language or, the teacher teaches Korean but is not himself Korean, in which case he surely has acquired the ability to speak the language. Sentence (72-b), on the other hand, is unambiguously expressing an acquired ability.

The following combinations are all used for circumstantial ability and all combine a noun with the existential verb 있다 *issta* or its negated form 없다 *ŏpsta*. The first combination involves the noun 수 *su* 'means.' This is the most frequent marker for participant-internal modality (however it is also used marginally for deontic and epistemic modality).

(73) ŏtuu-n pam i-lato pulkyŏtŭl-myŏn ka-l su
be:dark-A:PRES night COP-CSFX light-CSFX go-A:FUT means
iss-ŭpnita
exist-VSFX
'Even in the dark of night you can walk if you have a light.' (Wymann 1996b, (191) p175)
어두운 밤 이라도 불겨들면 갈 수 있읍니다.

The constructions in example (74) are listed in (Wymann 1996b) as circumstantial capability. Those modals convey the information that some action is possible because some enabling conditions are fulfilled.

(74) a. chungko-lŭl tŭt-ci anh-nŭn salam-ŭn tou-l
advice-ACC take-NLR NEG-A:PAST person-TOP help-A:FUT
kil-i ŏps-ŏyo
way-NOM not:exist-VSFX
'You cannot help a person who won't take advice (from you).' (Wymann 1996b, (193) p176)
충고를 듣지 않는 사람은 도울 길이 없어요.

b. cŏnaek cipul ha-l nŭnglyŏk iss-ŭpnita
full payment do-A:FUT capability exist-VSFX
'(I) can pay (you) back in full.' (Wymann 1996b, (194) p176)
전액 지불 할 능력 있읍니다.

c. kicha-lŭl tha-l yŏyu iss-ŏyo
train-ACC ride-A:FUT margin exist-VSFX
'(One) can take the train.' (Wymann 1996b, (195) p176)
기차를 탈 여유 있어요.

d. kaelyang-ŭi yŏci iss-ŏyo
improvement-GEN scope exist-VSFX
'It can be improved.' (Wymann 1996b, (196) p177)
개량의 여지 있어요.

Wymann (1996b, p176) proposes for instance the following context for sentence (74-c): there are ''landslides blocking the road from A to B'', the speaker has just called the station to know whether trains are operational, he utters (74-c).

Circumstantial vs internal/acquired The difference between circumstantial and internal/acquired capability is minimal but I will try to illustrate it through a comparison of the Korean modals with English *can*. First, sentence (72-a) can be translated as 'That teacher can speak Korean.' The meaning of *cul alta* and *can* coincide for this example, i.e. both allow for internal (the teacher is Korean) and acquired (the teacher has learned Korean) capability interpretations, but not circumstantial capability.

Sentence (72-a)	Circumstantial	Internal	Acquired
Korean *cul alta*	never	yes	yes
English *can*	no	yes	yes

The reason for the unavailability of the circumstantial reading is different for the two languages. In Korean, this is due to the general restriction of *cul alta* to non-circumstantial ability whereas in English, it is due to the meaning of the predicate (which surely doesn't fit a circumstantial interpretation in any language). Sentence (72-b) makes the previous distinction come to light. The Korean sentence allows only an acquired ability reading because of i) the subject of the sentence (human) and the meaning of the predicate and ii) the restriction of *cul alta* to non-circumstantial ability. Naturally the restriction on internal modality holds for English too, but *can* also allows for a circumstantial reading: I missed last week's swimming training because of the flu, but I tell you: 'I feel better now, I can swim!'

Sentence (72-b)	Circumstantial	Internal	Acquired
Korean *cul alta*	never	no	yes
English *can*	yes	no	yes

Finally, circumstantial readings are obtained by using the *su issta* combination, as in the following example:

(75) na-l su iss-ŏyo
fly-A:FUT means exist-VSFX
'(I) can fly!' (Wymann 1996b, (200) p179)
날 수 있어요.

On the one hand, the English translation allows the same acquired reading as (72-b), for instance, as an answer to the question 'Who has his pilot's certificate?'. On the other hand, the Korean sentence only allows for a circumstantial reading: I was sick and the doctor doubted whether I could take a flight to a conference, but I feel better now, i.e. (75).

Sentence (75)	Circumstantial	Internal	Acquired
Korean *su issta*	yes	never	never
English *can*	yes	no	yes

Finally, the use of negation doesn't modify this picture as the following example shows. Notice furthermore that negation always take scope over the modal element to yield a 'not able to' reading.

(76) I can't cook Korean food.

a. na-nŭn hankuk ŭmsik-ŭl mantŭ-l cul molŭ-nta
1SG-TOP korean food-ACC confect-A:FUT know-how know-VSFX
나는 한국 음식을 만들 줄 모른다.

b. na-nŭn hankuk ŭmsik-ŭl mantŭ-l su ŏps-ŏyo
1SG-TOP korean food-ACC confect-A:FUT means not:exist-VSFX
나는 한국 음식을 만들 수 없어요.

c. na-nŭn hankuk ŭmsik-ŭl mantŭ-l yŏyu-ka
1SG-TOP korean food-ACC confect-A:FUT margin-NOM
ŏps-ŏyo
not:exist-VSFX
나는 한국 음식을 만들 여유가 없어요.

Sentence (76-a) can be used in a conversation about cooking abilities, for instance, I can prepare Dutch food but (76-a). Suppose we are in the kitchen thinking about what we are going to eat and I realize that we do not have crucial ingredients to make a Korean meal, I can't say (76-a) but have to say (76-b) instead. Finally, (76-c) could be used to make explicit that I don't have time to cook a Korean meal.

Participant-internal necessity Finally, it is possible to express participant-internal necessity by using the participant-external suffix construction -야 하다 *-ya hata*.

(77) kanŭn swi hae-ya hae!
1SG-TOP pee AUX-ya AUX-VSFX
'I have to pee.'
나는 쉬 해야 해!

Participant-external modality

The Korean language uses two kind of constructions to express participant-external modality. The first kind involves a suffix (and a main verb) whereas the second combines a noun and a verb.

	Participant-external	
	Deontic	Goal-oriented
Suffix constructions	*-ya hata* *-to cohta/kwaenchanhta* *-myŏn cohta/toeta* *-ci anhŭmyŏn an toeta*	*-ya hata*
Lexical constructions	Noun + Verb	Noun + Verb

A peculiar feature of the participant-external subsystem is the abundance of deontic modals and the rarity of goal-oriented elements. I will first discuss deontic modality.

Deontic modality I will now review the different constructions used for permission. The most common encoding is a construction involving on the one hand a conditional or a concessive/emphatic suffix, -면 *-myŏn* 'if' and -도 *-to* 'even though' respectively, and on the other an evaluative verb, 좋다 *cohta* 'to be good' or 괜찮다 *kwaenchanhta* 'to be all right', or the auxiliary 되다 *toeta* 'become.'[34]

(78) a. nŏ-nŭn ka-to coh-ta
2SG-TOP go-CSFX be:good-VSFX
'You may go.' (Wymann 1996b, (110) p99)
너는 가도 좋다.

b. cŏ kuk kyŏng citae-e tŭlŏka-si-myŏn an toe-pnita
that state border zone-LOC enter-PRES-CSFX NEG become-VSFX
'(One) may not enter the state border zone there.' (Wymann 1996b, (116) p101)
저 국 경 지대에 들어가시면 안 됩니다.

c. na-nŭn kŏki-e ka-to kwaenchanh-sŭpnita
1SG-TOP there-LOC go-CSFX be:allright-VSFX
'I am allowed to go there.' (Wymann 1996b, (117) p101)
나는 거기에 가도 괜찮습니다.

Sentences (78-a) and (78-c) mean literally 'even if I/you go, it is good' (Wymann 1996b, p99), that is, we have the following logical form:

[34]Notice that, according to (Wymann 1996b, p101-102), the conditional suffix doesn't combine with *kwaenchanhta* and the concessive suffix doesn't combine with *toeta*. However, sentences (79-b) and (91) contradict this conclusion. As the two examples have been obtained from different sources (an internet dictionary and an informant's own example), I will take that as evidence against the hard constraint of (Wymann 1996a, (118)).

'x may do α' ≡ '(even) if x does α, it is good.'

However, sentence (78-a) gives a permission to the addressee whereas (78-c) reports the existence of a permission. Sentence (78-b) shows an example of combination with the negation *an*. The negation operates on the matrix verb of the construction, here the auxiliary *toeta*. This results in the negation of the permission, literally, 'it is not good if you enter the border zone there', therefore:

'x is not allowed to do α' ≡ 'if x does α, it is *not* good.'

If the negation is placed before the embedded verbal stem as in example (79-a) or if the verbal stem is the negative copula 않다 *anhta* (preceded by a nominalized clause) as in (79-b), the modal takes scope over the negation.

(79) a. ice-n cip-ŭlo an tolaka-to coh-so
now-TOP home-LOC NEG return-CSFX be:good-VSFX
'You don't have to go home now.'
이젠 집으로 안 돌아가도 좋소.

b. tangsin-ŭl tŏ isang kitali-ci anha-to toe-pnita
2PL-TOP anymore wait-NLR NEG-CSFX AUX-VSFX
'You don't have to wait anymore.'
당신은 더 이상 기다리지 않아도 됩니다.

'x is allowed not to do α' ≡ '(even) if x does *not* α, it is good.'

Notice that the construction can also be used for deontic necessity. Sentence (80) shows the construction -지 않으면 안 되다 *-ci anhŭmyŏn an toeta* using a nominalizing suffix -지 *-ci* and the conditional construction -면 되다 *-myŏn toeta* with two negations.

(80) na-nŭn il ha-ci anh-ŭmyŏn an toe-nta
1SG-TOP work do-NLR NEG-CSFX NEG become-VSFX
'I must work.' (Wymann 1996b, (132) p109)
나는 일 하지 않으면 안 된다.'

'x must do α' ≡ '(even) if it is not the case that x does α, it is *not* good.'

Finally, example (81) shows that, although this construction is conditional in nature, it allows further modification by a conditional clause to yield a conditional permission.

(81) ŭmsik-i namŭ-myŏn naeil cŏmsim-ŭlo ssa ka-myŏn
food-NOM remain-CSFX tomorrow lunch-LOC pack go-CSFX
t-waeyo
AUX-VSFX
'If you have food left over, you may take it for lunch tomorrow.'
음식이 남으면 내일 점심으로 싸 가면 돼요.

The second construction used to express permission combines straightforwardly a noun meaning 'permission' as 허가 *hŏka*, 허락 *hŏlak*, 허용 *hŏyong* and 인가 *inka* and a verb, for instance the existential verb 있다 *issta*, or its negative form 없다 *ŏpsta*, or a verb meaning 'to receive' as 어다 *ŏta* and 받다 *patta* or the auxiliary 되다 *toeta* 'to get, become.'

(82) a. chwalyŏngha-l hŏka-ka iss-ŏyo
take:photographs-A:FUT permission-NOM exist-VSFX
'(You) may take photographs.' (Wymann 1996b, (103) p96)
촬영할 허가가 있어요.

b. chwalyŏngha-l hŏlak-i ŏps-ŏyo
take:photographs-A:FUT permission-NOM not:exist-VSFX
'(you) may not take photographs.' (Wymann 1996b, (104) p96)
촬영할 허락이 없어요.

c. Yŏngchŏlŭn yŏnghwa kukyŏng-ŭl ka-l inka-lŭl
Yŏngchŏl-TOP movie show-ACC go-A:FUT permission-ACC
pat-ta
receive-VSFX
'Yŏngchŏl may go to see a movie show.' (Wymann 1996b, (106) p97)
영철은 영화 구경을 갈 인가를 받다.

d. i kŏs-ŭn kwanyong-ŭlo hŏyong-toe-ŏ iss-ta
this thing-TOP usage-INSTR permission-become-SFX exist-VSFX
'One may do this.' (Wymann 1996b, (107) p97)
이 것은 관용으로 허용되어 있다.

This construction is transparent enough not to need discuss it at great length. The important difference from the 'conditional' construction is in formal register. Basically, the noun-verb combinations are more formal and official than the 'conditional' construction. However, notice that it is a recurrent type of construction in Korean when it comes to express modal meanings.

I will now turn to deontic necessity. The same dichotomy as for possibility can be observed. There are on the one hand two suffix constructions and on the other noun-verb combinations. The most common encoding of deontic necessity (Wymann 1996b, p105) is a suffix construction combining the suffix -야 *-ya*[35] on a verbal stem with an auxiliary verb (mainly 하다 *hata* but also 되다 *toeta*).

(83) a. nŏ-nŭn cikŭm ttŏn-aya ha-nta
2SG-TOP now leave-SFX AUX-VSFX
'You must leave now.' (Wymann 1996b, (129) p107)
너는 지금 떠나야 한다.

[35]The suffix is preceded by a connective suffix: either *ŏ* or *a*.

b. i phyŏnci-lŭl ilk-ŏya ha-nta
this letter-ACC read-SFX AUX-VSFX
'(He) must read this letter.' (Wymann 1996b, (127) p106)
이 편지를 읽어야 한다.

c. kŭ-nŭn untong-ŭl ha-ci anh-aya ha-nta
3SG-TOP move-ACC AUX-NLR NEG-SFX AUX-VSFX
'He must not exercise too much.'
그는 운동을 하지 않아야 한다.

This construction can be used to give orders as in (83-a) or to report about an existing order (83-b). The suffix can also be used in a reduced form *-ya-kess-ta* (*-kess* being the suffix expressing futurity). When combined with negation, for instance with the negative copula *anhta* as in (83-c), the modal has scope over the negation thus conveying a prohibition. Notice that the negation cannot occur between the suffix and the auxiliary but this 'don't have to' reading is expressed with the permission construction as in example (79).

The last type of construction is used to express obligation. It simply combines a noun meaning 'obligation' or 'necessity' and a verb. Similarly to the noun-verb combinations expressing permission, the register is quite formal or official. The nouns 책무 *chaekmu* and 본문 *ponpun* mean 'obligation, duty' and combine with the copula as in example (84).

(84) a. ŏlŭn-ŭl sŏmki-nŭn kŏs-ŭn ai-ŭi chaekmu i-pnita
elder-ACC serve-A:PRES thing-TOP child-GEN duty COP-VSFX
'Children must show respect for the elders.' (Wymann 1996b, (118) p102)
어른을 섬기는 것은 아이의 책무 입니다.

b. kongpu-lŭl cal ha-nŭn kŏs-ŭn haksaeng-ŭi ponpun
study-ACC well do-A:PRES thing-TOP student-GEN duty
i-pnita
COP-VSFX
'Students must study well.' (Wymann 1996b, (119) p103)
공부를 잘 하는 것은 학생의 본분 입니다.

According to Wymann (1996b, p103), sentence (84-b) is only to be interpreted deontically (and not as a goal-oriented modality):

> ''the modal expression in [(84-b)] is interpreted not as stating that students must study hard in order to pass difficult and tough exams, but rather that they have a responsibility to study well in a general sense of fulfilling social responsibilities.''

This is also the case for the sentences containing the synonyms of *ponpun*, i.e. (84-a) with *chaekmu* and (85) with *ŭimu*. However 의무 *ŭimu* does not combine

with the copula but with the existential verb 있다 *issta* and with the verb 지다 *cita*, meaning 'to owe, bear.'

(85) napse-ŭi ŭimu-lŭl ci-pnita
taxes-GEN obligation-ACC owe-VSFX
'(One) must pay taxes.' (Wymann 1996b, (121) p104)
납세의 의무를 집니다.

Goal-oriented modality The means to express goal-oriented modality are not as varied as for deontic modality. The most frequent way to express goal-oriented necessity in Korean is to use the suffix construction *-ya hata* as in (86).

(86) yŏk-ŭlo ka-lyŏko ha-nta-myŏn, cŏngpantae pangyangŭlo
station-LOC go-SFX AUX-VSFX-CSFX contrary direction-LOC
kŏlŏk-aya ha-nta
walk-SFX AUX-VSFX
'If you want to go to the station, you should walk in the opposite direction.'[36]
억으로 가려고 한다면, 정반대 방향으로 걸어가야 한다.

The sentence is also grammatical with an explicit 'want'-antecedent as the following example shows.

(87) yŏk-ŭlo ka-ko siphŭ-myŏn, cŏngpantae panghyangŭlo kŏlŏk-aya
station-LOC go-SFX want-CSFX contrary direction-LOC walk-SFX
ha-nta
AUX-VSFX
'If you want to go to the station, you have to walk in the opposite direction.'
억으로 가고 싶으면, 정반대 방향으로 걸어가야 한다.

The combinations of the noun 필요 *philyo* meaning 'necessity, requirement' with either the existential verb, its negated form or the auxiliary *hata* or the noun 요구 *yoku* meaning 'requirement, demand' with the auxiliary *toeta* express goal-oriented necessity. They express that something is necessary in order to meet 'the challenges of a given situation or action' (Wymann 1996b, p104).

(88) a. sŏtul-ŭl philyo-ka ŏps-ŏyo
hurry-A:FUT necessity-NOM not:exist-VSFX
'We don't have to hurry.'
서두를 필요가 없어요.

b. i il-e-nŭn taetanha-n cosim-i yoku
this work-LOC-TOP be:considerable-A:PRES care-NOM necessity

[36] -려고: 'in order to' (Lee 1989, 4.3.5.2.3(8) p109).

toe-nta
AUX-VSFX
'(One) must do this work with great care.' (Wymann 1996b, (124) p105)
이 일에는 대단한 조심이 요구 된다.

The following example shows this construction with a purpose clause.

(89) uncŏn-esŏ sako-lŭl phiha-ki wihae-sŏnŭn cisokcŏkin
drive-from accident-ACC avoid-NLR in.order.to-SFX constant
cosim-i philyo-hata
vigilance-NOM necessity-AUX
'Constant vigilance is necessary in order to avoid accidents in driving.'
운전에서 사고를 피하기 위해서는 지속적인 조심이 필요하다.[37]

Finally, and most importantly, there is no modal element able to express goal-oriented possibility. According to my informants, the standard strategy to render goal-oriented possibility in Korean is to use an imperative in the (most) polite form. This could be compared to the following English sentence keeping in mind that the polite imperative form leaves the choice of executing the action to the hearer.

(90) If you want to go to Leiden, take the bus (for instance).[38]

However, the permission construction (as in sentence (91) with the concessive suffix) can be used to convey a goal-oriented meaning when listing the possibilities to achieve a goal.

(91) leitŭn-ŭlo ka-ko siphŭ-myŏn, pŏsŭ-lŭl tha-to toe-ko
Leiden-LOC go-SFX want-CSFX bus-ACC take-CSFX AUX-and
kicha-lŭl tha-to toe-pnita
train-ACC take-CSFX AUX-VSFX
'If you want to go to Leiden, you can take the bus or the train.'[39]
레이든으로 가고 싶으면, 버스를 타도 되고 기차를 타도 됩니다.

[37] -기 위해서: 'for the purpose of.'

[38] Schwager (2005) presents the German counterpart of imperatives with a possibility interpretation, as in (90), using *zum Beispiel* 'for example.'

[39] A more literal translation of the consequent of sentence (91) would be 'you may take the bus and you may take the train.'

Epistemic modality

Suffix constructions	Epistemic Lexical constructions	Adverbs
-ci molŭta	Noun + Verb	*ama*
-kess-		*hoksi*
		ŏccŏmyŏn

Epistemic possibility There are a number of ways to express epistemic possibility in Korean. It can be done with adverbs, and with noun-verb and suffix constructions. I will first present the adverbs and the suffix construction and finally the noun-verb combinations (with the parentheticals).

The adverbs for epistemic possibility are 아마 *ama*, 혹시 *hoksi* and 어쩌면 *ŏccŏmyŏn*. They are usually interpreted as English 'maybe, perhaps' and are very often used in combination with other strategies to express epistemic modality. Sentence (92-a) contains the adverb *ama* whereas in example (92-b) *hoksi* is used. Both sentences exemplify the possible combinations of epistemic elements. Sentence (92-a) combines three different epistemic elements: the adverb *ama* with the parenthetical *naŭi chuchŭkulo*[40] (literally 'according to my estimate') and the epistemic possibility modal *kŏs kathta*.

(92) a. ama na-ŭi chuchŭk-ŭlo Cecu-e sa-l kŏs
perhaps 1SG-GEN surmise-INSTR Cheju-LOC live-A:FUT thing
kath-ayo
seem-VSFX
'(He) may live in Cheju City (I presume).' (Wymann 1996b, (150) p131)
아마 나의 추측으로 제주에 살 것 같아요.

b. kŭ-nŭn hoksi onŭl o-l-ci molŭ-nta
3SG-TOP perhaps today come-A:FUT-NLR not:know-VSFX

[40]This parenthetical belongs to a family of constructions involving a noun and a suffix (see also (i-a)). Those constructions can also be made with an auxiliary to express epistemic possibility as in (i-b). The following nouns can be used: *chuchŭk* 'surmise,' *chucŏng* 'presumption,' *cimcak* 'estimate,' *saengkak* 'thought,' *kacong* 'supposition,' *kasang* and *sangsang* 'assumption.'

(i) a. saengkak-khŏnte na-nŭn sip li-lŭl kŏl-ŭl kŏs kath-ayo
thought-SFX 1SG-TOP ten mile-ACC walk-A:FUT thing seem-VSFX
'(I think) I may have walked ten miles.' (Wymann 1996b, (149) p131)
생각컨데 나는 십 리를 거를 것 같아요.

b. kŭ-nŭn yucoe-lo chucŏng ha-nta
3SG-TOP guilt-INSTR presumption AUX-VSFX
'He may be guilty (I presume).' (Wymann 1996b, (148) p130)
그는 요죄로 추정 한다.

'He may come today.' (Wymann 1996b, p(163) 137)
그는 혹시 오늘 올지 모른다.

Notice that the adverb *hoksi* often occurs in interrogative sentences. In sentence (92-b) it combines with the suffix construction -지 모르다 *-ci molŭta* in which a verbal stem of the embedded proposition is nominalized and the matrix verb meaning 'not know' takes an implicit first person subject. That is, a quite literal paraphrase of sentence (92-b) (without the adverb) would be something like 'I do not know whether he will come today.'

However, the most frequent form used to express epistemic possibility is the noun-verb construction 것 같다 *kŏs kathta* (Wymann 1996b, p135) where *kŏs* can be translated as 'thing' and *kathta* is the verb 'to seem' (the copula *ita* can also be used although it is mostly used for epistemic necessity):

(93) pŏsŭ-ka nŭc-ŭl kŏs kath-ta
bus-NOM be:late-A:FUT thing seem-VSFX
'The bus may be late.' (Wymann 1996b, (160) p136)
버스가 늦을 것 같다.

Finally, one can express epistemic possibility by combining a noun meaning possibility and a verb. For instance, the nouns 가망 *kamang*, 가능성 *kanŭngsŏng* and 수 *su* meaning 'possibility' can combine with the existential verb *issta* or its negation *ŏps-ta* and the noun 줄 *cul* 'likelihood' can combine with the verb 미다 *mit-ta* 'believe.'

(94) a. nalssi-ka kae-l kamang-ŭn iss-ta
weather-NOM be:clear-A:FUT possibility-TOP exist-VSFX
'The weather may clear up.' (Wymann 1996b, (145) p129)
날씨가 갤 가망은 있다.

b. Yŏngchŏl-ŭn o-l su ŏps-ŏyo
Yŏngchŏl-TOP come-A:FUT possibility not:exist-VSFX
'It may be that Yŏngchŏl won't come.' (Wymann 1996b, (158) p135)
영철은 올 수 없어요.

Necessity The canonical encoding for epistemic necessity (Wymann 1996b, p139) is a noun-verb combination and features 것 *kŏs* 'thing' with the copula 이다 *ita*. This construction is illustrated by sentence (95-a). Notice that it can also appear in grammaticalized forms as a suffix 걸 *kŏl* as in sentence (95-b).

(95) a. kŭ salam phikonha-l kŏs i-ŏyo
that man tire-A:FUT thing COP-VSFX
'He must be tired.' (Wymann 1996b, (166) p140)
그 사람 피곤할 것 이어요.

b. kŭ salam-i h-aessŭl-kŏl
that man-NOM AUX-VSFX-kŏl
'He must have done it.' (Wymann 1996b, (177) p146)
그 사람이 했을걸.

A large number of other noun-verb combinations are available to express epistemic necessity. Sentences (96-a), (96-b) and (96-c) exemplify respectively the combinations of 셈 *sem* 'conjecture' with the copula and 틀림 *thŭllim* 'error' with the negative existential verb and the conventionalized constructions involving 의심 *ŭisim* 'doubt' with the auxiliary and the negative copula 않다 *anhta*.[41]

(96) a. ilha-ko iss-nŭn sem-i-ta
work-SFX exist-A:PRES conjecture-COP-VSFX
'(He) must be working.' (Wymann 1996b, (169) p141)
일하고 있는 셈이다.

b. kŭ-nŭn al-ko iss-ŭm-e thŭllim ŏps-ta
3SG-TOP be:sick-SFX exist-NLR-LOC error not:exist-VSFX
'He must be sick.' (Wymann 1996b, (172) p143)
그는 알고 있음에 틀림 없다.

c. na-nŭn kŭ kŏs-ŭl cokŭmto ŭisim ha-ci anh-nŭnta
1SG-TOP that thing-ACC not:at:all doubt AUX-NLR NEG-VSFX
'That must (be so).' (Wymann 1996b, (174) p144)
나는 그 것을 조금도 의심하지 않는다.

Finally the future suffix -겠 *-kess* can be used to mark epistemic necessity and expresses a personal opinion of the speaker. This is somewhat comparable to the use of the English future to express epistemic necessity.

(97) a. ŏce sŏul-e pi-ka manhi w-ass-kess-ta
yesterday Seoul-LOC rain-NOM much come-PAST-FUT-VSFX
'(I presume that) it must have rained a lot in Seoul yesterday.'
(Wymann 1996b, (178) p147)
'어제 서울에 비가 많이 왔겠다.'

[41]Other combinations are possible with the following nouns: *malyŏn* 'arrangement,' *thŏ* 'expectation,' *phantan* 'judgement,' *li* 'good reason,' and *cul* 'likelihood' (Wymann 1996b, p139).

Conclusion

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Auxiliary verbs	*mosha*			
Suffix constructions	*-ya hanta*	*-ya hanta* *-to cohta* *-myŏn cohta*	*-ya hanta*	*-ci molŭta* *-kess-*
Adverbs				*ama* *hoksi*
Lexical constructions	Noun + Verb	Noun + Verb	Noun + Verb	Noun + Verb

Probably the most surprising feature of the Korean modal system is its use of a conditional-like construction to express deontic possibility (and necessity). I will not give a decompositional analysis of this construction but I assume that it has grammaticalized from a premodal reading (speaker's judgement about the value of an action) into a full deontic reading.[42]

The most common construction used to express modality in Korean consists of the combination of a noun and a verb. This type of encoding is used for all types of modalities (with some minor differences) and as Wymann (1996b, p136) says,

> ‘‘they generally encode the predicate of the modal proposition as verbal head of a relative clause through affigation of an adnominalizing suffix, which usually marks the predicate for future tense.’’

Wymann (1996b, p136-137) argues that, although the future tense suffix is a kind of default, other tense suffixes (present and past suffixes) can mark the embedded proposition. Figure 2.4 suggests that the scope of this claim should be revised somewhat. The table shows the number of Google-hits obtained for some very common verbs (the auxiliary, the existential and the verbs ‘to come,’ ‘to fly’ and ‘to go’). These results suggest that participant-internal combinations with a verb marked for present or past are at best marginal whereas they are quite standard for epistemic modals.

It is a difficult matter to classify the Korean modal system with respect to polyfunctionality.[43] For instance, *su issta* can appear in constructions expressing deontic necessity as shown in (Wymann 1996b, p112). However, as Wymann (1996b) suggests, this might not be a case of polyfunctionality as some ‘‘additional syntactic input’’ is needed to get the deontic reading. On the other hand the construction *kŏs ita* also seems to allow some deontic interpretations in some

[42] I would therefore add this path as a grammaticalization path to the semantic map of modality of (van der Auwera and Plungian 1998, Fig. 19 p111).

[43] A modal item is called polyfunctional if it can express meanings of different types, i.e. participant-internal, participant-external and epistemic.

1	2	3			
		Participant-internal		Epistemic	
		su issŭpnita 수 있습니다	*su issŏyo* 수 있어요	*kŏs kathta* 것 같다	*-ci molŭnta* -지 모른다
ha-(ta)	*-l* A:FUT	1540000	144000	220000	28000
AUX	*-nŭn* A:PRES	3	0	206000	1940
하다	*-n* A:PAST	2	0	61000	1270
iss-(ta)	*-ŭl*	105000	7090	229000	13100
'exist'	*-nŭn*	3	0	335000	5720
있다	*-ŭn*	0	0	20	0
o-(ta)	*-l*	51100	188	2220	1320
'come'	*-nŭn*	4	0	1970	48
오다	*-n*	0	0	8260	23
ka-(ta)	*-l*	87800	4040	1680	1170
'go'	*-nŭn*	1	3	6540	308
가다	*-n*	0	0	610	24

Figure 2.4: Number of hits of Google queries `"1:2 3"` restricted to domain `.co.kr`

isolated cases (Wymann 1996b, p113-117) but this reading seems to arise from pragmatic considerations.

Finally, it is also surprising that this rich system does not have a specialized modal for non-deontic participant-external possibility. The typical possibility modal *su issta*, which can express both participant-internal and epistemic modality, was not accepted by my informants in typical goal-oriented sentences.

2.3.2 Combinations of modal items

Epistemic and participant-internal

Sentence (98-a) of the following example combines the inability marker *mosha* with the noun-verb construction for epistemic modality *su issta* and (98-b) contains again *su issta* but this time as participant-internal with the epistemic *-ci molŭta*. Sentence (98-c) has an epistemic adverb over the learned ability *cul molŭta*.

(98) a. cŏ-nŭn chuicik-ha-ci mosha-l su-to
1SG-TOP employement-AUX-NLR unable-A:FUT means-SFX
iss-ŭpnita
exist-VSFX
'I might not be able to get a job.'
저는 취직하지 못할 수도 있습니다.

b. ilŏn munce-nŭn phul su iss-ŭl-ci-to mol-ŭnta
such problem-TOP solve means exist-A:FUT-NLR-SFX know-VSFX
'One may be able to solve those problems.' (Shaw 1980, (99))
이런 문제 는 풀 수 있을지도 모른다.

c. ama kŭ-nŭn hankuk ŭmsik-ŭl mantŭ-l cul
perhaps 3SG-TOP korean food-ACC confect-A:FUT know-how
molŭl-ci molŭ-nta
not:know-NLR not:know-VSFX
'Maybe he can't cook Korean.'
아마 그는 한국 음식을 만들 줄 모를지 모른다.

All sentences are unambiguously interpreted as an epistemic statement about some ability. I have furthermore not been able to elicit any other scope order than epistemic over participant-internal.

Epistemic and participant-external

All the combinations of epistemic elements with participant-external modals of example (99) contain an epistemic modal (an adverb in (99-a) and the noun-verb items *-ci molŭta* and *kŏs ita* in (99-b) and (99-c)) over the canonical participant-external necessity *-ya hata/toeta*.

(99) a. kŭ-nŭn ŏccŏmyŏn isaka-ya toep-nita
that-TOP maybe move-ya become-VSFX
'He may have to move.'
그는 어쩌면 이사가야 됩니다.

b. yŏlŏpun-ŭn myŏch sikan tongan kŭ kos-e anca kitali-ko
2PL-TOP several hour during that place-LOC sit wait-SFX
iss-ŏya ha-l-ci-to mol-ŭnta.
exist-ya AUX-A:FUT-NLR-SFX not:know-VSFX
'You may have to sit there for hours waiting.'
여러분은 몇 시간 동안 그 곳에 앉아 기다리고 있어야 할지도 모른다.

c. yŏk-ŭlo ka-ko siphŭ-myŏn, pŏsŭ-lŭl tha-ya toe-l
station-LOC go-SFX want-CSFX bus-ACC take-ya AUX-A:FUT
kŏs ip-nita
thing COP-VSFX
'If you want to go to the station, you might have to take the bus.'

역으로 가고 싶으면, 버스를 타야 될 것 입니다.

The scope order is always epistemic over participant-external. Notice that one of my informants at first judged the 'epistemic under deontic' combination 것 같아야 한다 *kŏs kathaya hanta* grammatical (syntactically well-formed) but changed her opinion because she was not able to make sense of it. I think this exemplifies the problem at hand. The scope order is not hard-wired in the syntax but is a semantic issue.

Participant-external and internal

Finally, combinations of participant-external and internal modalities are shown in example (100). They also all confirm the scope hypothesis.

(100) a. kŏl-ŭl su iss-ŏya ha-nta
walk-A:FUT means exist-ya AUX-VSFX
'He must be able to walk.'
걸을 수 있어야 한다.

b. kŭ cangmyŏn esŏ nŭn toumŏpsi kŏ-l ŭl-su issŏ-to
the scene in TOP unaided walk-A:FUT ability exist-SFX
toe-nta
become-VSFX
'You may be able to walk unaided in that scene.' (Shaw 1980, (34))
그 장면 에서 는 도움업시 걸 을수 있어도 된다.

Notice that sentence (100-b) needs a particular context to be accepted by my informants. This was already mentioned in (Shaw 1980) where she provided something like the following context: a director discusses a play with an actor and explains to him what he may or may not do.

Finally we can conclude that, although I have not been able to find or elicit all combinations, the present Korean data is consistent with the scope hypothesis.

2.4 Lillooet

The Lillooet language, also called St'át'imcets in the literature, is a Salish language of British Columbia. In order to ease the description of the Lillooet modal system, I will first give a short overview of some basic notions of the Lillooet language as described in (van Eijk 1997).

Lillooet has two sentences types: mono-clausal and multi-clausal. Mono-clausal sentences come in two flavors: with or without auxiliary.[44] The word

[44](van Eijk 1997, 22.4 p152): "Virtually every transitive stem that is temporal, aspectual, or modal in character may be used as an auxiliary."

order of mono-clausal sentences is the following,[35]

(101) a. Mono-clausal sentence without auxiliary:
predicate − enclitic (adverbial) − full-word adverb − complement(s)

b. Mono-clausal sentence with auxiliary:
predicate (auxiliary) − enclitic − full-word adverb − predicate (base)

Mono-clausal sentences and main clauses of multi-clausal ones may only contain an indicative or subjunctive predicate whereas subordinate clauses may only occur with a factual predicate (with some that-clause constructions) or a subjunctive predicate (with some wh-clause constructions).

According to (van Eijk 1997, Section 8), the words of the Lillooet language can be classified into two classes: clitics and full words. The clitics (mainly second position enclitics) are invariable whereas most full words can be subjected to morphological operations such as personal affixation (possessives, object and subject), and various suffixations (aspectual, lexical, transitivising and intransitivising, reflexive, reciprocal).

A word without personal affixation is called a stem. Stems are classified along two (overlapping) axes: there are (1) intransitive and transitive stems and (2) nominal and verbal stems. The following table adapted from (van Eijk 1997, figure 5 p44) shows this pattern. For instance, transitive stems in figure 2.5 take

	Marked			Unmarked		
Transitive verbal	ʔác'x̌-ən 'to see it'	k'áx-an' 'to dry it'				
Intransitive verbal	ʔác'x̌-əm 'to see'	k'áx-xal 'to dry'	ʔíƛ'-əm 'to sing'	ʔác'x̌ 'seen'	k'ax 'dry'	pálaʔ 'one'
Intransitive nominal	s-qayx^{w} 'man'	s-ɣap 'tree'	s-ʔíƛ'-əm 'song'	q^{w}uʔ 'water'	tmix^{w} 'land'	

Figure 2.4: The Lillooet stems

the transitivizer suffixes *-ən* and *-an'*.[36] The intransitive stems are all the other stems that do not end with a transitivizer. Intransitive stems are either verbal stems overtly marked for intransitivity (with for instance the intransitivizers *-əm* or *-xal*) or nominalized stems (with the nominalizing prefix *s-*) or unmarked stems (nouns and 'naturally' intransitive verbs).

[35]See (van Eijk 1997, 36 p226).
[36]Transitive stems are mandatorily marked.

2.4.1 Lillooet modal system

I will use the classification of modality due to van der Auwera and Plungian (1998) (participant-internal, participant-external and epistemic) with the addition of evidential modality.

Participant-internal modality

Participant-internal Circumfix
ka-. . . -a

To express participant-internal modality, Lillooet mainly uses the circumfix *ka- . . . -a* on the base predicate.[37]

> "The combination also expresses 'to manage, to be able to,' as in **ʔác'x̌-əm** 'to see, have a vision, intr.' that becomes **ka-ʔác'x̌-m-a** 'to be able to see, to manage to see' *[or **q^{w}al** 'to speak, talk', **ka-q^{w}ál-a** 'to be able to speak']*. The underlying notion is that of a lack of control: something just happens suddenly or by accident without a person controlling the event, or a person finally manages to achieve something*[, usually after some trying]."* (van Eijk 1997, 10.1.3)

I will concentrate on the ability interpretation of the circumfix which typically occurs with unergative verbs, as in example (102).

(102) ka-álkst-kan-a
ka-work-1SG-a
'I am able to work.' (Demirdache 1997, (8-a) p102)

[37]There are also two other ways to express participant-internal possibility. First, there is an 'expert, ability, knowledge' suffix *-atməx* which, when combined with the root *zəw* 'to know' to form *zəwátməx* expresses know-how, i.e. 'knowing how to do something.' However, this suffix is not productive and is 'confined to a few lexicalized contexts' (Davis, pc). Second, there is the lexical suffix *-tən* mentioned by van Eijk (1997) but, according to Davis (pc), it is 'an old pattern which has fallen into disuse.' It can, in negative sentences and in combination with the transitivizer, *-s* have the meaning of 'able to.'

(i) a. *ʔáz'*- 'to buy': *ʔáz'-tən* 'to be able to buy, afford',
mays- 'to fix': *máys-tən* 'to be able to fix',
nik'- 'to cut': *nik'-tən* 'to be able to cut.'
b. xʷʔaz kʷ-a-stám' kʷa-s-ník'-tən-s-an
NEG DET-IMPF-what DET-NLR-cut-tən-TR-(3SG-)1SG.SBJ
'There isn't anything I can cut with, I don't have anything to cut with.': I can't cut. (van Eijk 1997, 15.2.16 p80)

The ability reading also obtains with unaccusative and transitive[38] verbs in case they occur in a sentence with an auxiliary or with negation (examples in (103) and (104) respectively).[39]

(103) a. waʔ ka-ʕíp-a ku káwkəw kənc'ʔá
IMPF ka-grow-a DET sagebrush DEIC
'Sagebrush can grow around here.'
(Matthewson, Rullmann and Davis 2005, (16-a) p9)

b. waʔ ka-sə́k-s-ás-a ti-sq'úm'c-a ti-twə́w'w'ət-a
IMPF ka-hit-CAUS-(3SG-)3SG-a DET-ball-DET DET-boy-DET
'The boy is able to hit the ball.' (Demirdache 1997, (21-b') p110)

c. huy'-ɬkan-hə́m'-ƛ'uʔ ka-máys-c-a
AUX-(3SG-)1SG-hə́m'-ƛ'uʔ ka-fix-CAUS-a
'I will be able to fix it after all (-hə́m'-ƛ'uʔ).' (van Eijk 1997, p17)

[38]According to (Demirdache 1997, p104), the directive transitivizer cannot combine with the circumfix *ka-...-a* (unlike to the causative one). However, sentence (235) of (Matthewson 2005, p281) would seem to contradict this statement:

(i) ka-čəkʷ-ən-ɬkán-a ʔayɬ ka-ʔúc'qʔ-a ʔayɬ
ka-pull-DIR-1SG-a then ka-go.outside-a then
I pulled her, and she managed to get out.

According to Davis (pc), this is most likely a speech error and Demirdache (1997) is right about this combinatorial restriction.

[39]Otherwise, those verbs get a reading involving *suddenly* or *accidentally*. In mono-clausal sentences without negation or adverbial quantification, the interpretation depends on the properties of the verbal stem as follows (Demirdache 1997):

	Intransitive		Transitive	
	Unaccusative Bare root (BR)	Unergative BR-INTR	BR-causative	BR-directive
+ *ka-...-a*	accidental	able to	accidental	∅
NEG+ *ka-...-a*	able to	able to	able to	∅
AUX+ *ka-...-a*	able to	able to	able to	∅

Example (i)fn48 would thus be a counterexample to this table. More examples from (Matthewson 2005) seem to challenge this generalization. For instance, in sentence (411) (Matthewson 2005, p132) a stem marked by the causative is under the scope of both an auxiliary and adverbial quantification but doesn't seem to get an ability reading. The same thing happens in sentence (522) (Matthewson 2005, p153) with a bare root under an auxiliary, in sentence (39) (Matthewson 2005, p185-186) with a bare root under negation or in (52) (Matthewson 2005, p254) with both negation and auxiliaries. Notice finally that (Davis, Matthewson and Rullmann 2006, 4.4 p20) has recently argued against such a table claiming that the circumfix *ka-...-a* is 'insensitive to aspectual morphology.' In recent work, Davis, Matthewson and Rullmann (to appear) have argued that the incompatibility of the directive transitivizer with the circumfix *ka-...-a* is 'purely morphological in nature.'

Example (103-a) shows an unaccusative verb under the most common auxiliary *waʔ* and, (103-b) and (103-c) show two verbs marked for transitivity by the causative under the auxiliaries *waʔ* and *huz'*.

(104) a. xʷʔa̓z kʷ-a-s ka-qʷál-a
NEG DET-IMPF-3SG.POSS ka-speak-a
'He couldn't say anything.' (van Eijk 1997, 21.1n2)

b. xʷʔa̓z kʷ-a-s ka-kʷís-a ti-k'əƛ'h'-a
NEG DET-NLR ka-fall-a DET-rock-DET
'The rock can't fall.' (Demirdache 1997, (22-c) p111)

c. xʷʔa̓z kʷ-s ka-sə́k-s-ás-a ti-sq'úm'c-a
NEG DET-NLR ka-hit-CAUS-(3SG-)3SG-a DET-ball-DET
ti-twə́w'w'ət-a
DET-boy-DET
'The boy is not able to hit the ball.'
(Demirdache 1997, (22-b) p111)

The negation in sentence (104-a) scopes over an unergative verb, whereas in (104-b) the verb is unaccusative and in (104-c) it is marked for transitivity.

Finally, notice that, contrary to what (Matthewson et al. 2005, p10) argued, Davis et al. (2006) managed to elicit sentences where the participant-internal circumfix is used to express participant-internal necessity. I will obviously follow (Davis et al. 2006) as it supersedes (Matthewson et al. 2005).

(105) kan ƛ'uʔ ka-q'sán'k-a ɬ-ən qan'ím-əns k Henry
1SG.SBJ just ka-laugh-a when-1SG.SBJ hear-TR DET Henry
kəns-ʔucʷalmícʷ-ts
try-Indian-mouth
'I have to laugh when I hear Henry try to speak Indian.'
(Davis et al. 2006, (60))

However, the necessity reading doesn't arise in contexts about the (immediate) future in which an auxiliary must be used.

(106) cuz' nsnánaʔ kw s-Gertie
going.to sneeze DET NOM-Gertie
'Gertie is gonna sneeze.' (Matthewson et al. 2005, (19))

Participant-external modality

Participant-external modality can be expressed through lexical verbs (actually expressing deontic modality) or with the versatile enclitic *-ka*.

	Participant-external	
	Deontic	Goal-oriented
Enclitics	*-ka*	*-ka*
Lexical verbs	*xʷəc'ən*	
	nliʕ'ʷc	
	nxʷʔan'	

Enclitic *-ka* This enclitic covers a broad swathe of the different subtypes of participant-external modality. It is used to express deontic modality (although some sentences could as well be interpreted as bouletic), both obligation and permission, and that will be the interpretation I will focus on. However, it also appears in *sentence-equivalent* constructions to express (the speaker's) wishes and hopes (van Eijk 1997, 29) and in counterfactual antecedents, consequents and wishes (Matthewson et al. 2005, p6).[40]

(107) a. cukʷun'-ɬkán-ka-tiʔ
finish-(3SG-)1SG-ka-DEM
'I should finish that.' (van Eijk 1997, 32.1.6(b))

b. xʷʔáẓ-ka kʷ-a-su-pápt waʔ ʔúqʷaʔ
NEG-ka DET-IMPF-2SG.POSS-always IMPF drink
'You shoudn't be drinking always.' (van Eijk 1997, 32.1.6(d))

c. plan-ɬkaɬ-ká-tuʔ waʔ cixʷ
already-1PL-ka–tuʔ IMPF arrive.there
'We should have arrived there already.' (van Eijk 1997, 32.3.7(c))

Notice that although *-ka* expresses by default (almost) universal quantification (equivalent to English *must/should*), it can express possibility as well (example (108)).

(108) a. lán-ɬkaxʷ -ka ác'x̌-ən ti kʷtámc-sʷ-a
already-2SG -ka see-TR DET husband-2SG.POSS-DET

[40]In this irrealis use, it is usually coupled to the subjunctive. Furthermore it is required that the embedded proposition be false (Matthewson et al. 2005, p7). The following sentences exemplify the contrast between the wish, irrealis wish and deontic uses, respectively:

(i) a. swáts-ka kʷ-s-ƛ'iq-s ɬkʷúnsa kʷ-s-Bill
I hope DET-NLR-come-3SG.SBJ today DET-NLR-Bill
'I hope Bill will come today.' (van Eijk 1997, 3(a) p187)

b. qʷacác-as -ka ti sqáyxʷ-a
leave-3SG.SBJ -ka DET man-DET
'I wish the man would leave.' (Matthewson et al. 2005, (11-i) p7)

c. qʷacác -ka ti sqáyxʷ-a
leave -ka DET man-DET
'The man should leave.' (Matthewson et al. 2005, suggestion from fn6 p7)

'You must/can/may see your husband now.'
(Matthewson et al. 2005, (10-e) p6)

b. lán-łkax^{w} -ka áč'x-ən ti k^{w}támč-s^{w}-a, t'uʔ
already-2SG -ka see-DIR DET husband-2SG.POSS-DET but
ạz-as k-wá-su xát'-min' k-wá-su
NEG-3SG.SBJ DET-IMPF-2SG.POSS want-TR DET-IMPF-2SG.POSS
nás-al'mən, t'uʔ áma
go-want just good
'You may go see your husband, but you don't have to.' (literally: '...if you don't want to go, that's okay.') (Davis et al. 2006, (30)p9)

Sentence (108-b) would be contradictory if *-ka* could only express deontic necessity (Davis et al. 2006, p8-9).

Finally, I have found only one sentence that could suggest a goal-oriented interpretation of the enclitic.

(109) ƛ'uʔ wáʔ-ka n-sx^{w}ák^{w}ək^{w}-a c'áq^{w}-an'-əm nił
just IMPF-ka 1SG.POSS-heart-a eat-TR-1PL FOC
s-pápt-s-a təx^{w}əx^{w}-wít ł-as k^{w}ís-alt
NOM-always-3SG.POSS-DET increase-3PL COND-3SG.SBJ fall-child
i sq^{w}əyíč-a
DET.pl rabbit-DET
'But I think we had to eat them because they were always having babies.'
(Matthewson 2005, (248) p98)

A possible interpretation of this sentence is that they had to eat the rabbits in order to keep their number low which would indeed be a goal-oriented interpretation. However it is doubtful at this point that the enclitic has a goal-oriented use. Or better said, it is doubtful that goal-oriented constructions, in the way we have implicitly characterized them up to now (with a purpose clause or a *want*-conditional), are to be found in Lillooet (Davis, pc). Lillooet speakers (two informants of Davis, pc) seem to use different strategies to express goal-oriented modality. For instance, one speaker uses for the English sentence, "You have to drive to get to Lillooet," a translation meaning literally "Only someone who drives reaches Lillooet." However it is interesting to notice that the connection between goal-oriented and participant-internal modality is made explicit in goal-oriented possibility sentences as one possible translation involves the circumfix *ka-...-a*:

(110) To go to Vancouver, you can take the bus. (Davis, pc)

a. Wáʔ-łkac^{w} ka-nás-a l-ti-bus-a l-ku
IMPF-2SG ka-go-a in-DET-bus-DET at-DET-Vancouver-DET

panúph-a

'You can go to Vancouver on the bus.'

It is clear that if the goal-oriented sentence "To go to Vancouver, you can take the bus" is the case then sentence (110-a) is also the case.

Lexical verb *xʷəc'ən* 'to force' This verb can be used to express that someone (3rd person form) has some obligation (van Eijk, pc).

Lexical verbs 'to (be) allow(ed)' Deontic possibility (permission) can also be expressed by lexical verbs, for example, by the verb *nliʕʷc* 'open' (Davis, pc) as in the following sentence,

(111) xʷʔạz kʷ-a-s-ənlíʕ'ʷc l-wi-snuláp
NEG DET-IMPF-3SG.POSS-allowed PREP-DET-2PL
'It is not allowed to you folks' (van Eijk 1997, 24.1.1(s) p164)

The verb *nxʷʔan'* can express the (not-)giving of a permission as in (112-a), as well as having a permission (or not) as in (112-b) with a passive morphology.

(112) a. wáʔ-łkan-tuʔ n'ás-al'mən, ƛ'uʔ ʔáy-ƛ'uʔ kʷ-a-s
IMPF-1SG-tuʔ go-want.to just NEG-just DET-IMPF-3SG.POSS
xʷʔán'-č-as ta-n-kʷúkʷʔ-a
allow(DIR)-1SG-3SG.SBJ DET-1SG.POSS-grandmother-DET
kʷən-wá n'as.
DET-1SG.POSS-IMPF go
'I wanted to go, but my grandmother didn't let me go.'
(Matthewson 2005, (127) p200)

b. ʔáz-ƛ'uʔ kʷ-a-s nxʷʔ-an'-tumúləm
NEG-just DET-IMPF-3SG.POSS allowed-1PL.PASS
kʷ-s-ʔac'x̌-ən-tánəmwit
DET-NLR-see-DIR-3PL.PASS
'We weren't allowed to see them.' (Matthewson 2005, (529) p433)

Epistemic modality

There are four different ways to express epistemic modality: two enclitics and two 'adverbs.'

Epistemic	
Adverbs	Enclitics
sx̌ək	*-k'a*
nsxʷákʷəkʷ	*-kəł*

Adverbial *sx̌ək* The element *sx̌ək*[41] 'maybe, perhaps' is not properly an adverb, van Eijk (1997, 36.1) considers it could be more a "mono-clausal sentence itself, paratactically linked to the sentence it modifies." However, as sentence (113) shows, *sx̌ək* can be found in adverbial position; therefore I will from now on refer to it as an adverb.[42]

(113) waʔ -k'a kənc'ʔá sx̌ək ku káwkəw
IMPF -k'a here perhaps DET sagebrush
'Sagebrush might be growing around here.'
(Matthewson et al. 2005, fn7 p9)

(114) a. sx̌ək ʔac'x̌ən-ɬkán-kɬ-tuʔ kʷu-c'íʔ
perhaps see-(3SG-)1SG-kəɬ-tuʔ DET-deer
'Perhaps I might see a deer.' (van Eijk 1997, 36.1(a))
b. sx̌ək nas-wit-kə́ɬ-tuʔ
perhaps go-3PL-kəɬ-tuʔ
'They might go, you never know.' (van Eijk 1997, 36.1(b))

The adverb often occurs in combination with an (epistemic) enclitic, as in examples (113), (114) and (118-c), although this is not a necessity as examples in (115) show. Furthermore the contribution of the enclitic *-kəɬ* in (114) is probably to force a future interpretation.

(115) a. níɬ-x̌'uʔ sx̌ək kʷ-s-waʔ čəkčák-wit...
FOC-just maybe DET-NLR-IMPF cool-3PL
'I think that helped them get cool...' (Matthewson 2005, (243) p98)
b. palʔ-usáʔ-x̌'uʔ sx̌ək kʷ-ən-s-kʷáməm
one-berry.shape-just maybe DET-1SG.POSS-NLR-take
'I got maybe one dollar.' (Matthewson 2005, (153) p269)

Enclitic *-k'a* This enclitic is characterized by (van Eijk 1997, 32.1.8) as expressing "possibility, surmise."

(116) (van Eijk 1997, 32.1.8 p202)
a. sáma'ʔ-k'a kʷu-sqʷal'ən-táli
whiteman-k'a DET-tell-3SG.3SG
'It must have been a whiteman (sámaʔ) who told (sqʷál'ən) her.'

[41]Probably from the root *x̌ək* 'to count, figure out.'

[42]Henry Davis brought to my attention that another item is used in the lower dialect (Mount Currie). It is *kánas k'a* which is derived from the question marker *kan* ('is it the case?') followed by the third person subjunctive and the modal enclitic *k'a*. It can play the role of a sentence initial adverb as *sx̌ək* or can be used as a predicate governing a subordinate clause. I will not discuss this element much further as it, for as far as I understand, has the same characteristics as *sx̌ək* with respect to combinations with other modals.

b. xʷʔáẓ-k'a kʷ-a-s-xʷʔít
NEG-k'a DET-IMPF-3SG.POSS-many
kʷu-waʔ-stəm'tə́təm'-s
DET-IMPF-belonging-3SG.POSS
'Apparently she did not have many belongings.'

The difference in meaning between this epistemic enclitic and the evidential enclitic is expressed in (van Eijk 1997) as follows:

> **-k'a** refers only to a possibility, while **-an'** refers to an almost inevitable conclusion, compare [the following sentences]:

(117) a. wáʔ-k'a k'ʷzúsəm
IMPF-k'a work
'He must be at work (that's why he's not here).'
b. wáʔ-as-an' k'ʷzúsəm
IMPF-3SG.SBJ-an' work
'It looks like he is working.'

Furthermore this enclitic can be used for both epistemic necessity and possibility (Matthewson et al. 2005, (4) p3):

(118) a. waʔ-k'a sə́naʔ qʷənúxʷ
IMPF-k'a ADV sick
'He may be sick.' (Context: Maybe that's why he is not here.)[43]
b. plan-k'a qʷacác
already-k'a leave
'Maybe he's already gone.' (Context: His car isn't here.)
c. qʷacác-k'a tuʔ k John, ƛuʔ waʔ-k'a sx̌ek
leave-k'a then DET John but IMPF-k'a perhaps
k-wa-s xʷʔạz ƛuʔ k-wa-s qʷacác
DET-IMPF-3SG.POSS NEG just DET-IMPF-3SG.POSS leave
'John may have left, but maybe he hasn't left yet.'
(Davis et al. 2006, (8)p4)

As Davis et al. (2006) notice, sentence (118-c) would be contradictory if the enclitic *-k'a* only expressed epistemic necessity.

Enclitic *-kəł* This enclitic is not purely epistemic but expresses "remote future, possibility" (van Eijk 1997, 32.1.7).

(119) a. qlil-min'-cih-as-kə́ł-tuʔ
angry-TR-2SG-3SG.SBJ-kəł-tuʔ

[43] 'sə́naʔ': "This adverb is used when the subject nurtures an unfulfilled wish or indicates he has changed his mind or that his plan have changed" (van Eijk 1997, 28.2.2 p182-183). Within this example, the 'changed plans' interpretation seems to be the only possible interpretation.

'He might get angry at you.' (van Eijk 1997, 32.1.7(a))

b. ƛ'ạḷạn-c-ás-kł ti-sqaǎxaʔ-láp-a
bite-1SG-3SG-kəł DET-dog-2PL.POSS-DET
'The dog of you folks might bite me.' (van Eijk 1997, 32.1.7(d))

c. ʔạḷṣəm-łkán-kł
get.sick-1SG-kəł
'I might get sick.' (van Eijk 1997, p17)

(120) cʔas-kəł ku zús-xal
come-kəł DET catch-INTR
'A police man might come.' (Matthewson et al. 2005, (7-b) p4)

In its epistemic interpretation, the enclitic *-kəł* is limited to possibility meanings but even then only licenses a future interpretation (Matthewson et al. 2005, p4). This property would support the conclusion of (Davis et al. 2006) to characterize the enclitic as not epistemic. I do realize the use of *-kəł* is not a pure epistemic one but I will still put it in this category and hope to make it clear why this is legitimate with the formalization of the modal system.

Example (119-a) shows a combination of the enclitic with the enclitic *-tuʔ*. It was analyzed by (van Eijk 1997, 32.1.2 p200) as a 'definite past' enclitic but it is better seen as an adverb meaning roughly 'then' ((Matthewson et al. 2005) and Davis, pc). The effect of this combination is a 'more remote possibility than *-kəł* by itself' (van Eijk 1997, 32.3.12 p210). It seems that this combination only allows an epistemic reading.[44] Notice that the possible event must lie in the future.

Adverbial construction *nsxʷákʷəkʷ* 'my heart' The parenthetical[45] construction *n-sxʷákʷəkʷ* 'my heart' works similarly to epistemic *sx̌ək*. It is not a typical epistemic but is used to mark a speaker's judgment. As such it might as well be considered as an evidential device, however I will treat it in what follows as an epistemic item.[46]

(121) a. wáʔ-ƛ'uʔ n-sxʷákʷəkʷ ƛ'íq-s-tum'x-as...
IMPF-just 1SG.POSS-heart arrive-TR-1SG.3SG
'I think he took me...' (Matthewson 2005, (342) p118)

b. ni sqáyxʷ-a waʔ nah-ən-ítas Rimsky-Korsakov
DET man-DET IMPF name-TR-3PL.3SG Rimsky-Korsakov

[44] A past in the future (English future perfect) interpretation doesn't seem available: all examples involving this combination are translated as epistemic possibilities.

[45] Davis, pc.

[46] It can also be compared to the English 'according to' construction (restricted to the speaker) which is somehow more evidential than epistemic. The parallel between the two constructions should become clearer in the section on combinations of modal items.

n-sxʷákʷəkʷ
1SG.POSS-heart
'I think the man is called Rimsky-Korsakov.'
(Matthewson 2005, (410) p132)

c. ʔạz n-sxʷákʷəkʷ kʷ-a-s s-łik-s-twít-as
NEG 1SG.POSS-heart DET-IMPF-3SG.POSS STAT-clear-TR-3PL.3SG
kʷa kʷukʷ ʔi-núkʷ-a
DET.PROG cook DET-other-DET
'I think some of them didn't know how to cook.'
(Matthewson 2005, (816) p475)

Combinations of epistemic modals We have already seen that the epistemic adverb *sx̌ək* often combines with both epistemic enclitics (see examples (113), (114) and (118-c)). However, the contribution of the adverb to the enclitic (or vice versa) is slightly different in the two cases. The enclitic *-k'a* is a modal with default universal force. When it is 'modified' by *sx̌ək*, it is interpreted as a possibility modal, i.e. the adverb modifies the interpretation of the enclitic. The epistemic use of *-kəł* is by default a possibility modal therefore it doesn't need to be modified by the adverb to enforce this reading. We are left with three options, either i) the adverb enforces the epistemic reading of the enclitic (against its pure future reading), or ii) the enclitic forces a 'future event' interpretation of the adverb, or iii) both at the same time.[47]

As mentioned in a previous section, the epistemic adverb *nsxʷákʷəkʷ* 'my heart' is used to mark the sentence where it occurs as being a speaker's judgment (much like *according to me* in English). Its combination with the epistemic enclitic *-k'a* in (122) restricts the epistemic judgment to the speaker only.

(122) ...n-sxʷákʷəkʷ-k'a ni ʔ kʷ-s-čún-it-as Tchaikovsky.
...1SG.POSS-heart-k'a DEM DET-NLR-say-3PL Tchaikovsky
'I think maybe it was Tchaikovsky.' (Matthewson 2005, (408) p131)

This is justified as the judgment can genuinely be switched to another source than the speaker.

Evidential modality

I will now present two enclitics of the evidential system. I have avoided so far to discuss evidentiality as a modal category but will make an exception in this case (as well as for Turkish) as those elements have recently been analyzed and formalized as (a variation of) epistemic modals (see (Matthewson, Rullmann and Davis 2006)). In particular, both enclitics share with epistemic modality the property that the speaker who uses one of them commits himself to the truth

[47] I am unfortunately not yet sure which option is more likely.

of the utterance. This has the following consequence: sentences of the form "*p-an' but* ¬*p*" or "*p-k^{w}u*ʔ *but* ¬*p*" are not felicitous. The Lillooet system has two evidential items, a quotative and a direct evidence enclitic.

Evidential enclitic
-an'
*-k^{w}u*ʔ

Enclitic *-an'* This enclitic is an *indirect inferring evidential* (Matthewson et al. 2006, p8). It is used by speakers to convey that the speaker makes an inference based on observed evidence. It is thus often translated as *must* or *apparently*.

(123) a. tayt-áx^w-an'
hungry-2SG.SBJ-an'
'You must be hungry.' (van Eijk 1997, 32.1.3(a))

b. x^{w}ʔáẓ-as-an' k^w-a-s huy' ƛ'iq
NEG-3SG.SBJ-an' DET-IMPF-3SG.POSS AUX come
'It looks like he won't come.' (van Eijk 1997, 32.1.3(c))

It can be seen in sentence (123-b) that the enclitic has scope over negation.

Enclitic *-k^{w}u*ʔ The quotative enclitic is used to mark information as second-hand (i.e. not witnessed by the speaker), third-hand and also as folklore (it is often used when telling legends).[48]

(124) a. ƛ'ák-k^{w}uʔ káti ʔ
go-k^{w}uʔ along
'He was going along, as I was told.' (van Eijk 1997, 32.1.9(a))

b. k^{w}an-xit-ə́m-k^{w}uʔ ki-x̌^{w}ʔucin-álq^w-a
take-TR-3SG-PASS-k^{w}uʔ DET-four-stick-DET
'Four sticks were taken from him, I hear.'
(van Eijk 1997, 36.1.1(ah))

This enclitic also takes scope over negation.

Conclusion

There is a clear distinction between participant-internal and the rest of the system. Participant-internal modality is morphologically marked on the 'verb' whereas the other types use enclitics, adverbial constructions or plain verbs.

[48]See (Matthewson et al. 2006).

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Enclitics	*ka-. . . -a*	*-ka*	*-ka*	*-k'a*
				-kəɬ
Adverbs				*sx̌ək*
Parentheticals				*nsx^{w}ák^{w}ək^w*
Verbs		*x^{w}əc'ən*		
		nliʕ^{w}c		
		nx^{w}ʔan'		

There are two main features of Lillooet that are worthy of interest in that they do not fit with the traditional view of modality based on English modal auxiliaries.

1. Lillooet modals are not polyfunctional (van der Auwera et al. 2005).
2. Lillooet enclitics expressing epistemic and participant-external modality have a variable force (even though the default is universal force).

The first point is best seen in the previous table: there is no modal item appearing in two different columns (types of modality). Modal items are strictly assigned to one modal category.[49] The second point is about enclitics *-ka* and *-k'a*. As we have seen in examples (108) and (118), those enclitics are able to express necessity (default) and possibility.

2.4.2 Combinations of modal items

In the case of Lillooet, we also need to look at combinations involving the evidential enclitics.

On enclitics

As mentioned in (van Eijk 1997, 32.3.1 p207), the enclitics can only be combined in a fixed order.

(125) Evidential Epistemic/Deontic Epistemic (future)
-an' < *-k^{w}uʔ* < *-k'a/-ka* < *-kəɬ*

Although it is not explicitly mentioned in (van Eijk 1997), the interpretation of the enclitics goes from left to right. The next example shows this for a predicate with three enclitics:

[49] A more detailed analysis of the enclitic *-ka*, as in (Matthewson et al. 2005), shows however that the situation is more complex: this suffix expresses different meanings from deontic to counterfactual conditional or counterfactual wishes. However, the main point here is that it does not express epistemic modality.

(126) Sentence: *predicate* -e_1 -e_2 -e_3
Interpretation: -e_1 > -e_2 > -e_3 > *predicate*
e_1 has (semantic) scope over e_2, which has scope over e_3, which has scope over the predicate.

However, combinations of modal enclitics are quite rare. Most of the relative scopes are thus abstracted from the combinations with the other non-modal enclitics. The only problematic combinations that would contradict the scope order in (127) are i) *-ka-k'a* and ii) *-ka-kəɬ*.

(127) *Evidential > Epistemic > Participant-external > Participant-internal*

However both combinations are unattested and therefore don't contradict the scope hypothesis.

Evidential and epistemic modality

The only combinations found involve the quotative enclitic -*kʷuʔ*. This seems to make sense if the evidential *-an'* is indeed an evidential item of direct (sensory) evidence. In both examples the quotative has scope over the epistemic item. In example (128), the epistemic modal is the enclitic *-k'a* (here translated as *apparently*).[50]

(128) qʷacac-kʷuʔ-k'a-tuʔ ʔi-waʔ-ʔəs-cmál't
leave-kʷuʔ-k'a-tuʔ DET-IMPF-have-offspring
'The parents had left apparently, as I was told.'
(van Eijk 1997, 32.3.6(b) p209)

As remarked above, the order of enclitics fixes an interpretation where the quotative has scope over the epistemic modal. The following sentence combines the quotative enclitic with the epistemic *nsxʷákʷəkʷ* ('my heart') which gets translated as *I think*.

[50]The following example taken from (van Eijk 1997, p17) would seem to contradict the previous claim:

(i) a. qʷacac-kʷuʔ-k'á-tuʔ
leave-kʷuʔ-k'a-tuʔ
'He left allegedly, it seems.'

Here the translation literally follows the word order of the sentence, i.e. -*kʷuʔ* as *allegedly* and *-k'a* as *it seems*. However this gloss contradicts the interpretation rule in (126) which is respected for the other examples. I will thus consider that sentence (i-a) should actually be translated along the lines of 'He apparently left, as I was told'.

(129) wáʔ-kʷuʔ ƛ'it nʔán'was n-sxʷákʷəkʷ kʷ-sčmal't-s
IMPF-kʷuʔ also two 1SG.POSS-heart DET-offspring-3SG.POSS
tiʔ
DEM
'I think he also had two children.' (Matthewson 2005, (286) p397)

Notice that the quotative doesn't appear to be translated. However, sentence (129) is embedded in a larger context where the storyteller makes an extensive use of the quotative to tell her family's story (at that point her grandmother's story). This is a way to mark that the information is from second-hand, i.e. that 'the speaker did not witness the talked-about events personally' (van Eijk 1997, 32.1.9 p202).

Evidential and participant-external modality

No combination of evidential and participant-external modality has been found.

Evidential and participant-internal modality

All the combinations of evidential and participant-internal modality are attested. Notice that (130-a) combines the evidential *-an'* and *ka-...-a* morphology but that the evidential precedes the *-a* suffix. This is probably to avoid an impossible combination as *-a-an'*.[51]

(130) a. ka-q'ʷus-axʷ-án'-a
ka-frighten-2SG.SBJ-an'-a
'You look frightened.' (van Eijk 1997, 32.2)

b. ka-xim'-a-kʷúʔ-tuʔ
[disappear]-kʷuʔ-tuʔ
'He disappeared, I heard.' (van Eijk 1997, 32.3.2(d))

Epistemic and participant-external modals

Combinations of the epistemic enclitics *-k'a* and *-kəɬ* with the deontic one *-ka* have not been found. We have just seen that there are three other possible combinations: 1) an epistemic adverb with the participant-external enclitic, 2) an epistemic adverb with a participant-external verb and 3) an epistemic enclitic with a participant-external verb. From these three possibilities, I have only found examples for 1) and 3). Example (131) combines the epistemic adverb *nsxʷákʷəkʷ* with *-ka*. As expected, the epistemic has semantic scope over the deontic (goal-oriented) enclitic.

[51] This needs to be checked.

(131) ƛ'uʔ wáʔ-ka n-sxʷákʷəkʷ-a c'áqʷ-an'-əm...
just IMPF-ka 1SG.POSS-heart-a eat-TR-1PL
'But I think we had to eat them...' (Matthewson 2005, (248) p98)

No example of the type of (131) has been found with the epistemic adverb *sx̌ək*. This is possibly due to the fact that *sx̌ək* is mainly used as a disambiguating expression (forcing a possibility reading) with the epistemic enclitics.

The second example combines the epistemic enclitic *-k'a* with the participant-external predicate *xʷʔan'*. The scope hypothesis is also respected.

(132) ʔáẓ-k'a sónaʔ kʷ-a-s xʷʔan'-tumúɬ-as
NEG-k'a though DET-IMPF-3SG.POSS allow-1PL-3SG
kʷ-ət-wá waʔ q'íq'ɬil kənátiʔ sáy'səz'
DET-1PL.SBJ-IMPF IMPF run DEIC play
'Even though we weren't supposed to, we ran around everywhere playing.'
(Matthewson 2005, (137) p202)

It remains to be checked whether combinations of the second form are possible.

Epistemic and participant-internal modals

The following examples combine the epistemic enclitic *-kəɬ* with the circumfix *ka-..-a*. However, Demirdache (1997, p112) argues that causative roots with *ka-...-a* under a modal operator (be it *-kəɬ* or *-k'a*) get an ability reading.

(133) a. ka-sək-s-as-á -kəɬ ti sq'úm'c-a ti twə́w'w'ət-a
ka-hit-TR-(3SG-)3SG-a -kəɬ DET ball-DET DET boy-DET
'The boy will/might be able to hit the ball.'
(Demirdache 1997, (24-a))

b. ka-ʕuy't-kán-a -kəɬ...
ka-sleep-1SG-a -kəɬ
'I might be able to sleep...' (Davis et al. 2006, (20) p7)

c. ka-q'ʷəɬ-kan-á-kɬ
ka-scorch-1SG-a-kəɬ
'I might get scorched.' (van Eijk 1997, p17)

The natural interpretation of those sentences has the epistemic modal having scope over the participant-internal one. I have not found any of the other possible combinations in the literature but the following examples were provided by my informant.

(134) (Davis, pc)

a. sx̌ək ka-nas-kan-á kəɬ
perhaps ka-go-1SG-a kəɬ

'Maybe I'll be able to go.'

b. huz' k'a həm' t'uʔ ka-tsúkʷ-s-asa-a natcʷ
AUX k'a həm' PART ka-finish-3SG-CAUS tomorrow
'He should be able to finish that tomorrow.'

c. ay t'uʔ n-sxʷákʷəkʷ kʷ-á-su ka-úts'qʔ-a
NEG PART 1SG.POSS-heart DET-NOM+IMPF-2SG.POSS ka-go.out-a
ɬ-as gap
when-IMPF.3SBJ evening
'I don't think you're going to be able to go out this evening.'

As expected, all the examples follow the scope hypothesis.

Participant-external and participant-internal

The only example found combines an irrealis *-ka* with the participant-internal circumfix:

(135) ka-qʷusxit-án-a-ka
ka-shoot-1SG.SBJ-a-ka
'I wish I could shoot it.' (van Eijk 1997, 32.3.2(e))

In (van Eijk 1997, 32.5 p213-215), the contrast between enclitics (in particular *-ka*) after the indicative or the subjunctive is discussed. I already mentioned that *-ka* can have other readings, for instance, in combination with the subjunctive as in (135) 'it generally expresses a wish' (van Eijk 1997, p213). Following the series of examples provided in (van Eijk 1997, p214), it seems reasonable to assume that the following combination involving the indicative, and thus a participant-external reading, is possible:

(136) ka-qʷusxit-(ɬ)kan-a-ka
ka-shoot-1SG-a-ka
'I should be able to shoot it.'

The participant-internal circumfix can combine with the lexical verb *xʷəc'ən*. However in this case, the verb does not express a deontic meaning but its base lexical meaning.

(137) cʷʔay t'uʔ kw-s ka-xʷ´əts'-s-an-a ta sq´əqy'əcʷ-a
NEG PART DET-NOM ka-force-CAUS-1SG.ERG-a DET boy-DET
n-skuzaʔ kw-s nas-ts skul inátcʷas
1SG.POSS-child DET-NOM go-3POSS school yesterday
'I couldn't force my son to go to school yesterday.' (Davis, pc)

Finally, we can conclude that the scope hypothesis seems to be valid for Lillooet although some combinations are not yet accounted for. Or in order to be on the

safe side, we can at least conclude that the hypothesis is surely not invalidated by the Lillooet data.

2.5 Turkish

Turkish is an agglutinative language spoken mainly in Turkey. The standard word order is SOV. The Turkish language has five suffixes for case, the accusative *-(y)I*, the dative *-(y)A*, the locative *-DA*, the ablative *-DAn* and the genitive *-(n)In/-Im*. Turkish has a rich set of TAM markers and a rich verbal morphology as can be seen in figure 2.6. The negative marker *-mA* occurs on the verb before the TAM markers (except the ability marker). The upper case vowels and consonants in

1	2	3	4	5
-(y)A (ability/possibility)	*-(y)Abil*	*-DI* (perfective)	*-(y)DI* (past copula)	*-DIr* (generalizing modality)
		-mIş (perfective/ evidential)	*-(y)mIş* (evidential copula)	
		-sA (conditional)	*-(y)sA* (conditional copula)	
		-mAlI (obligative)		
		aorist		
		future		
		imperfective		

Figure 2.5: Order of some co-occuring tense/aspect/modality markers

figure 2.6 signal the use of vowel harmony and consonant alternation respectively (Göksel and Kerslake 2005, p22-23 & 43). The upper case *D* consonant stands for the voiceless/voiced pair 't'/'d' (Göksel and Kerslake 2005, p43). If the preceding consonant is voiceless,[52] 't' is used and otherwise 'd' is used. The following table represent the different vowels of the Turkish language (see (Lewis 1975, p15-18) and (Göksel and Kerslake 2005, p10)).

	Unrounded		Rounded	
	Non-high	High	Non-high	High
Back	a	ı	o	u
Front	e	i	ö	ü

The vowel harmony of suffixes then comes in two types depending on the preceding vowel: I-type and A-type.

[52]The voiceless consonants of Turkish are: 'p', 't', 'k', 'f', 'h', 'ç', 'ş' and 's.'

Preceding vowel	I-type suffix	A-type suffix
a, ı	ı	a
o, u	u	a
e, i	i	e
ö, ü	ü	e

For instance, the obligative suffix *-mAlI* can take two forms. The first one, *-malı*, is attached to verbal stems like *oku-* 'read': the last vowel of the stem is a *u*, thus the *A* becomes a *a*, which turns the *I* into *ı*. The second, *-meli*, is attached to stems like *gel-* 'come' where the only vowel *e* induces *A* to be realized by *e* and thus *I* by *i*.

I'll assume with (Cinque 2001) that the Mirror Principle is correct, that is, "an outer suffix corresponds to a functional head higher than that corresponding to an inner suffix." Therefore with respect to table 2.6, a complex *Verb-(y)Abil-sA* with the ability and conditional suffixes is interpreted as *If able to Verb*.

Finally, Turkish sentences come in two types: nominal and verbal sentences. The predicate of verbal sentences is a verb, as in (138-a), whereas in the case of a nominal sentence it can be a noun, as in (138-b), an adjectival or a postpositional phrase.

(138) a. Bir mektup yaz-dı-m
a letter write-PERF-1SG
'I wrote a letter.' (Göksel and Kerslake 2005, (12) p141)

b. Necla öğretmen.
Necla teacher
'Necla is a teacher.' (Göksel and Kerslake 2005, (6) p120)

2.5.1 Turkish modal system

The Turkish modal system is 'unfortunately' too rich to be explained in a couple of pages. I will therefore present the main representatives of each modality type but will not aim at exhaustivity.

Participant-internal modality

Participant-internal Suffix
-(y)A/-(y)Abil

The participant-internal suffix comes in two distinct forms dependent on their position with respect to the negation marker: *-(y)A* occurs before, and *-(y)Abil* occurs after the negation marker *-mA*.[53] The suffix can express all types of ability,

[53] I will gloss both markers as *-abil* throughout this section.

that is, learned ability as in (139-a), but also abilities due to external circumstances as in (139-b).[54]

(139) a. oku-yabil-ir-im
read-ABIL-AOR-1SG
'I am able to read.' (Kornfilt 1997, 2.1.3.4.7)

b. Hasan gelecek kış üniversite-ye gid-ebil-ecek
Hasan next winter university-DAT go-ABIL-FUT
'Hasan will be able to go to the university next winter.'
(Kornfilt 1997, 2.1.3.2.2)

(140) a. anlı-ya-mı-yor
understand-ABIL-NEG-AOR
'He cannot understand.'

b. Bugün ev-de kal-a-ma-m
today home-LOC stay-ABIL-NEG-AOR.1SG
'I can't stay home today.' (Göksel and Kerslake 2005, (5) p120)

The negation can also scope under the ability suffix to express the ability, or freedom, not to perform an action.

(141) söyle-me-yebil-mek
say-NEG-ABIL-INF
'to be able not to say' (Göksel and Kerslake 2005, (90) p345)

Notice that combinations of the ability suffix with unaccusative verbs, as *korkmak* 'to fear' or *düşmek* 'to fall,' are mostly odd, except in the present tense with an epistemic interpretation (Savaşır 1986).

Finally the lexical constructions *kadir olmak* and *muktedir olmak* combining a noun meaning 'able, capable' and the auxiliary *olmak* can also be used to express participant-internal modality. I will however concentrate on the suffix of ability.

Participant-external modality

	Participant-external	
	Deontic	Goal-oriented
Suffix	*-(y)Abil*	*-(y)Abil*
	-mAlI	*-mAlI*
Lexical constructions	*gerek(-mek)*	*gerek(-mek)*
	lazım	*lazım*
	zorunda	*zorunda*
	izin verilmek	
	müsaade edilmek	

[54]The external circumstance is for instance Hasan's admission to the university.

Suffixes Göksel and Kerslake (2005, p352) suggest that *-mAlI* is mostly used deontically, i.e. to express "an obligation perceived or imposed by the speaker." However, the suffix is used to express all kinds of participant-external modality: deontic, weak deontic/advice and goal-oriented. First, example (142-a) shows a typical deontic use of *-mAlI*. In sentence (142-b), the suffix takes scope over negation and is interpreted consequently as 'must/should not' licensing a deontic/advice interpretation.

(142) a. oku-malı-y-ız
read-NEC-COP-1PL.
'We must read.' (Kornfilt 1997, 2.1.3.4.6)

b. yapıl-ma-malı-dır
be.done-NEG-NEC-GM
'It should not be done.'

The goal-oriented use of *-mAlI* is exemplified in the following sentences. Sentence (143-a) is taken from instructions on how to preserve food and (143-b) shows a more traditional goal-oriented use with a want-conditional. Notice that sentence (143-a) involves a passive under the necessity modal yielding a generic reading. The necessity is obviously not imposed on the preserve but on the implicit agent 'if one wants to kill all bacteria, one has to cook the preserve well.'

(143) a. Konserve iyi pişir-il-meli
preserve well cook-PASS-NEC
'The preserve must be cooked well.' (Corcu 2003, (8a))

b. Batı Rusya'nın tavrını değiştirmek istiyorsa bunu
west Russia'GEN attitude change want-AOR-COND this
anla-malı.
understand-NEC
'If the west wants to change Russia's behaviour, it has to understand that.'

The necessity suffix can also be used in a compound construction above the perfect suffix, i.e. *-mIş olmalı*.

(144) 6.30'a kadar yola çık-mış ol-malı-yız.
6.30'LOC by set off-PERF AUX-NEC-1PL
'We must be on the road by 6.30.'
(Göksel and Kerslake 2005, (181) p366)

The suffix *-(y)Abil* can also be used for all participant-external meanings. In sentence (145-a) it expresses deontic modality and sentence (145-b) shows that the negative suffix in its deontic interpretation expresses a prohibition.

(145) a. bilgisayar-ım-ı ne zaman ist-er-sen
computer-1SG.POSS-ACC when want-AOR-2SG.COND
kullan-ABIL-ir-im
use-ABIL-AOR-2SG
'You can use my computer whenever you like.'
[I give you permission.] (Göksel and Kerslake 2005, (99) p347)

b. Burada otur-a-maz-sınız
here sit-ABIL-NEG.AOR-2PL
'You can't sit here.' [I/We don't allow it.]
(Göksel and Kerslake 2005, (100) p347)

The following sentence exemplifies a goal-oriented use of the suffix. The goal-oriented modal element is embedded under the adverb *acaba* expressing 'I wonder (if)' (Göksel and Kerslake 2005, p308).

(146) Anne-m-in kışın üşü-mesi için acaba ne
mother-1SG.POSS-GEN in.winter be.cold-NEG-mAsI için wonder what
yap-ABIL-iriz?
do-ABIL-AOR.1PL
'I wonder what we can do so that my mother won't be cold in the winter?'[55] (Göksel and Kerslake 2005, (81) p479)

Lexical constructions There are two types of lexical constructions for participant-external modality, one for necessity and one for possibility.[56] First, the necessity lexical constructions all express deontic and goal-oriented notions like *-mAlI*. However, whereas *-mAlI* was said to lean towards the deontic end of participant-external modality, those lexical constructions are mainly used for non-deontic modality (Göksel and Kerslake 2005, p235): they "present an objective obligation, that is, one arising from external factors operating independently of the speaker." These constructions involve a lexical element such as *gerek* or *lazım*

[55]The purpose clause *-mAsI için* 'in order for, so that' is used when the clause has an overt separate subject; *-mAk için* 'in order to' is used when the subject of the purpose clause is the same as that of the superordinate clause (Göksel and Kerslake 2005, p479).

[56]There is also an interesting evaluative conditional construction that indirectly relates to participant-external modality:

(i) Bugün burada temizlik yap-ıl-sa iyi ol-ur
today here cleaning do-PASS-COND good AUX-AOR
'It would be good if some cleaning were done here today.'
(Göksel and Kerslake 2005, (40) p495)

This construction is used "to express an evaluation (usually positive) of a certain possible action, often with the strong implication that the speaker wants or expects this action to be performed" (Göksel and Kerslake 2005, p495). This construction can thus be used to express strong advice or a polite order.

meaning 'necessary', or *zorunda* meaning 'compulsion'[57] and a non-finite clause denoting the action that is necessary.[58]

(147) a. Ankara'ya git-me-m lazım/gerek.
Ankara'DAT go-INF-1SG.POSS necessary
'I have to go to Ankara.'[59]
b. Ankara'ya git-mek zorunda-yım
Ankara-DAT go-INF compulsion-1SG
'I have to/am obliged to go to Ankara.'
(Göksel and Kerslake 2005, (118d) p351)

The gloss of sentence (147-b) makes it clear that a deontic reading is possible. This is also the case for the other lexical constructions. The sentences in (148) show that *gerek* can be used with the usual deontic/advice interpretation.

(148) a. Ahmet-in gel-me-si gerek-ecek.
Ahmet-GEN come-INF-3SG.POSS necessary-FUT
'Ahmet will have to come.' (Wilson and Saygın 2001, (28))
b. Doktora görün-me-si gerek.
doctor see-INF-3SG.POSS necessary
'She should see a doctor.' (Corcu 2003, (11))

Finally, the following sentence illustrates a traditional goal-oriented reading with a want-conditional and the lexical item *zorunda*.

(149) Koalisyon, stratejik risk-ler-i azalt-mak isti-yor-sa,
coalition strategic risk-PL-ACC reduce-INF want-IMPF-COND
operasyonel risk-ler-i üstlen-mek zorunda.
operational risk-PL-ACC assume-INF have.to
'The coalition, if it wants to reduce the strategic risks, must assume the operational risks.'
(BBC's Turkish press review, 03/04/2003)

The last lexical constructions are only used for deontic possibility and combine a noun meaning permission with a (passivized) verb meaning 'to give, to do': *izin*

[57]This lexical element is actually more complex: it is composed of the noun *zor* meaning 'compulsion,' a noun compound and the locative case *-DA*.

[58]There is also a lexical construction for prohibition with *yasak olmak*:

(i) 90 gün içinde yasak olu-yor
90 days in prohibited AUX-AOR
'It will be prohibited in 90 days.'

[59]Literally: "My going to Ankara is necessary."

verilmek and *müsaade edilmek* 'to be allowed.'[60]

(150) 'to be allowed'

a. izin ver-il-mek
permission give-PASS-INF

b. müsaade ed-il-mek
permission do-PASS-INF

Notice that those lexical constructions expressing permission can be used under the deontic suffix *-mAlI* as in the following example.

(151) Bush'un terör-le savaş-ı bitir-me-si-ne izin
Bush'GEN terror-INSTR war-ACC finish-INF-3SG.POSS-DAT permission
ver-il-meli
give-PASS-NEC
'Bush must be allowed to finish the war on terror.'
(BBC's Turkish press review, 01/11/2004)

Epistemic modality

Epistemic		
Verbal constructions	Adverbs	Suffix
olmalı	*herhalde*	*-(y)Abil*
olması gerek/lazım	*belki*	
olsa gerek	*galiba*	
olabilir		

Epistemic modality can be expressed through several means: with some adverbs, with verbal constructions and with suffixes.

Adverbs I will first present some adverbs (but notice that the list is far from exhaustive). The adverb *herhalde* of sentence (152-a) means 'perhaps, probably, presumably, I expect;' *belki* of sentence (152-b) means 'perhaps, maybe' and *galiba* means 'probably, perhaps, I think' as in (152-c).

(152) a. Telefon numaram siz-de vardır herhalde.
telephone number you-DAT exist-GM perhaps
'I expect you've got my telephone number.'
(Göksel and Kerslake 2005, (27) p218)

b. Abla-m belki şarkı söyl-üyor-du
sister-1SG.POSS maybe song sing-IMPF-PAST

[60]The active forms of these constructions are respectively *izin vermek* and *müsaade etmek* 'to give permission.'

'Maybe my sister was singing songs.'
(Wilson and Saygın 2001, (25))

c. Galiba daha çok çalış-malı-sın
probably more work-NEC-2SG
'Perhaps, you should work harder.' (Corcu 2003, (6d))

Verbal constructions All the verbal constructions involve a suffixed form of the auxiliary *ol-*. The first construction combines the auxiliary with the necessity suffix *olmalı* and expresses 'an inference drawn about a past or present event or state from strong circumstantial evidence' (Göksel and Kerslake 2005, 344). Sentence (153-a) is a nominal sentence but this construction can also be used with a compound verb form involving a verb suffixed with the perfective *-mIş* as in (153-b) or the progressive (Göksel and Kerslake 2005, p364).

(153) a. Kapı aşık, ev-de ol-malı-lar
door open home-LOC AUX-NEC-3PL
'The door's open; they must be home.'
(Göksel and Kerslake 2005, (87) p345)

b. Kayseri'yi gör-müş ol-malı-yım ama...
Kayseri'ACC see-PERF AUX-NEC-1SG but
'I must have seen Kayseri but...'
(Göksel and Kerslake 2005, (176) p365)

The second construction involves the participant-external construction *-mA-POSS gerek/lazım* of example (148) with the auxiliary *ol-* and, when used in the third person form, it expresses a 'strong assumption based upon knowledge or other relevant facts' (Göksel and Kerslake 2005, p344).

(154) Bu saatt-e Ali'nin iş-te ol-ma-sı lazım.
this hour-DAT Ali'GEN work-LOC AUX-INF-3SG.POSS necessary
'Ali must be at work at this hour.'
(Göksel and Kerslake 2005, (85) p344)

The third construction expresses probability and combines the conditional form of the auxiliary *ol-* with the lexical item *gerek* 'necessary.'

(155) a. En iyisi bu ol-sa gerek.
most good this AUX-COND necessary
'This one is probably the best.'
(Göksel and Kerslake 2005, (83) p344)

b. yukarı-da birisi matkap kullanıyor ol-sa gerek
above-LOC someone drill use-IMPF AUX-COND necessary
'Someone upstairs must be using a drill.'
(Göksel and Kerslake 2005, (189) p368)

The construction can be nominal as in (155-a) or form a compound with a lexical verb as in (155-b). In the last case, the embedded verb can be suffixed with the perfective or the progressive. In both cases, the judgment is made at speech time but about a past or present situation respectively (this is also the case for *olmalı* in example (153)).

Finally, the last construction is a possibility variant with the auxiliary verb suffixed by *-Abil*. It is used to express epistemic possibility and just as with the other constructions, it combines with an embedded verb suffixed with the perfective or the progressive.

(156) a. Ali'nin patronu onu sev-mi-yor ol-ABIL-ir
Ali'GEN boss him like-NEG-IMPF AUX-ABIL-AOR
'It's possible Ali's boss doesn't like him.'
(Göksel and Kerslake 2005, (190) p368)

b. Ayşe bu fotoğraf-ı Hatice'ye göster-miş
Ayşe this photograph-ACC Hatice'DAT show-PERF
ol-ABIL-ir
AUX-ABIL-AOR
'Ayşe may have shown this photograph to Hatice.'
(Göksel and Kerslake 2005, (177) p365)

Suffix The suffix *-Abil* can be used to express epistemic possibility (and even counterfactuality when combined with the past copula (Göksel and Kerslake 2005, (35) 12.1.1.3)).[61] Usually it then combines with the aorist as in sentence (157-a), and sometimes even with the future suffix as in (157-b).

(157) a. Yağmur yağ-ma-yabil-ir
rain rain-NEG-ABIL-AOR
'It may not rain.' (Göksel and Kerslake 2005, (104) p348)

b. Bu ev-ler birkaç yıl sonra yık-ıl-ABIL-ecek
this house-PL some year later destroy-PASS-ABIL-FUT
'These houses may be demolished in a few years' time.'
(Göksel and Kerslake 2005, (103) p348)

As can be seen in (157-a), the suffix *-Abil* in its epistemic interpretation has scope over negation as the mirror principle predicts. Furthermore, the pre-negation ability suffix *-yA-* can yield an epistemic interpretation when it is combined with the auxiliary *ol-*. In this case, the negation has scope over the epistemic modal.

[61]Notice that the suffix *-DIr*, named 'generalizing modality marker' by Göksel and Kerslake (2005), is often translated as 'presumably, probably, certainly, must.' However its use is not strictly restricted to modality as defined in this dissertation. I will therefore leave its study as future research.

(158) Osman Ankara'da ol-a-maz.
Osman Ankara'LOC AUX-ABIL-NEG
'Osman can't be in Ankara.' (e.g. because I saw him in London an hour ago) (Göksel and Kerslake 2005, (106) p348)

Evidential modality

I will incorporate the evidential suffix *-mIş* in the list of modals because it is usually analyzed in the semantic literature as an epistemic modal with a presupposition on the evidence used for its evaluation (see for example (Izvorski 1997)).

Evidential Suffix
-mIş

The suffix *-mIş* is usually translated as 'apparently, it seems.' First notice that there are cases when this suffix can only express perfectivity (its other possible interpretation). In particular, it is interpreted as perfective when it is attached to a predicate followed by an auxiliary as *ol-* in (156-b).[62] The evidential suffix can attach to verb stems up to position 3 in figure 2.6, as in sentence (159-a), and to nominals as in (159-b).

(159) a. anl-ıyor-muş-sun
understand-IMPF-miş-2SG
'Apparently you understand/understood.'
(Göksel and Kerslake 2005, p85)

b. evim-miş
my.house-EV.COP
'It is/was apparently my house.'
(Göksel and Kerslake 2005, p85)

[62]The suffix is also interpreted as a perfect when it occurs under the past copular suffix *-(y)DI* as in (i-a) or under the conditional one *-(y)sA* as in (i-b), or under the generalizing modality suffix *-DIr* as in (i-c), (Göksel and Kerslake 2005, p80):

(i) a. başla-mış-tı-k
start-PERF-PAST.COP-1PL
'We had started.'

b. anla-ma-mış-sa
understand-NEG-PERF-COND.COP
'If he has not understood'

c. gör-müş-ler-dir
see-PERF-3PL-GM
'They must have seen [it].'

This suffix is used in two distinct situations as an evidential marker. It can be used both as a reportative and as an inferential. The first case corresponds to a situation where the material embedded under the suffix has been obtained from some other source (person, newspaper, etc.). Notice that the suffix is then to be used mandatorily. The following conversation makes this clear.

(160) (Göksel and Kerslake 2005, (134) p356-357)

a. (Ayşe, to Çiğdem): Anne-m biraz rahatsız
mother-1SG.POSS some ill
'My mother is not very well.'

b. (Çiğdem, to Nesrin): Ayşe'nin anne-si biraz
Ayşe'GEN mother-3SG.POSS some
rahatsız-mış
ill-miş
'It seems Ayşe's mother is not very well.'

The second use of the evidential suffix is in inferential statements, that is, when the speaker wants to express that the embedded sentence is not based on direct evidence but is the result of reasoning or inference as in example (161). Notice that, as can be expected, the negation scopes and is interpreted under the evidential element.

(161) Gözlüğ-üm-ü yan-ım-a al-ma-mış-ım.
glasses-1SG.POSS-ACC side-1SG.POSS-DAT have-NEG-miş-1SG
'I seem not to have my glasses with me.'
(Göksel and Kerslake 2005, (140) p358)

Conclusion

The Turkish modal system has several interesting properties. First, the system of suffix markers implements naturally the scope order of modal elements. Basically, the participant-internal suffix occurs under the participant-external or epistemic one and those in turn occur under the evidential suffix. I will go into more details about those combinations in the next section. Second, figure 2.7 suggests a full polyfunctionality of the modal system. I will follow (van der Auwera and Ammann 2005) and (van der Auwera et al. 2005, 253-254) and disregard the specific syntactic constructions needed to express a particular type of modality. That is, I will claim that although the suffix *-mAlI* is essentially a participant-external suffix, its interpretation as epistemic in verbal constructions with the auxiliary *ol-* qualifies it as a polyfunctional element. In the same way, although *gerek* is mainly used for participant-external modality, its use in the epistemic verbal construction *olsa gerek* illustrates its polyfunctionality. Therefore, I will disregard the fact that a particular interpretation is linked to a particular syntactic construction and thus I will consider the Turkish modal system as fully

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Suffix	*-(y)A/-(y)Abil*	*-(y)A/-(y)Abil* *-mAlI*	*-(y)A/-(y)Abil* *-mAlI*	*-(y)A/-(y)Abil*
Adverbs				*herhalde* *belki*
Verbal constructions				*olmalı* *olması gerek* *olabilir*
Lexical constructions		*gerek(-mek)* *lazım* *zorunda* *izin verilmek* *müsaade edilmek*	*gerek(-mek)* *lazım* *zorunda*	

Figure 2.6: The Turkish modal system

polyfunctional.

2.5.2 Combinations of modal items

Evidential modality

As figure 2.6 shows, the evidential marker can scope over both participant-internal and external suffixes and over epistemic ones. This is illustrated in the following examples.

(162) a. Oku-yabil-ecek-miş
read-ABIL-FUT-EV.COP
'Apparently he will be able to read [it].'
(Göksel and Kerslake 2005, (12) p78)

b. oku-malı-ymış-ız
read-NEC-EV.COP-1PL
'[They say that] we have to read.' (Kornfilt 1997, (1293) p373)

c. Hasan orada olmalı-ymış
Hasan there AUX.NEC-EV.COP
'[They say that] Hasan must be there.' (Margreet Dorleijn, p.c.)

Sentence (162-a) combines the evidential suffix with the ability suffix *-(y)Abil*; sentence (162-b) shows the participant-external suffix *-mAlI* under *-mIş* and (162-c) combines the evidential with the epistemic necessity construction *olmalı*. In all those examples, the evidential has scope over the other modal element.

I have not found any combinations involving the evidential suffix and modal adverbs. It is however difficult to imagine the interpretation that would obtain

from such a combination and I will actually assume that such combinations are at best marginal. I will first give an example of what such a combination could mean. Faller (2002, p249) argues for instance that in Quechua the modal enclitic *-puni* expressing 'high certainty' and the reportative evidential *-si* can be combined and express their meaning relative to the embedded proposition independently of each other.

(163) Pilar-qa t'anta-ta-puni-s irqi-ta-qa qu-rqa-n.
Pilar-TOP bread-ACC-puni-si child-ACC-TOP give-PST1-3SG
p='It was bread that Pilar gave to the child'
certainly p and speaker was told that p (Faller 2002, (215a) p249)

However, the situation in Turkish is not similar to that in Quechua. In particular, sentence (162-c) exemplifies the same suffix/enclitic combination as sentence (163) but is unambiguously interpreted with the evidential having scope over the epistemic. Therefore the epistemic judgment is assigned to the original source of the reportative. In Turkish, the modal adverbs and the evidential suffix are performative (Nuyts 2001) in the sense that they involve the speaker's commitment. For this reason, I do not expect them to be used (unambiguously) in the same sentence.

Epistemic and participant-internal

I will now turn to combinations of epistemic elements with participant-internal modals.

(164) a. Coşkun'u ikna ed-e-me-yebil-ir-im.
Coşkun'ACC persuasion AUX-ABIL-NEG-ABIL-AOR-1SG
'I may not be able to persuade Coşkun.'
(Göksel and Kerslake 2005, (105) p348)

b. oku-yabil-miş ol-ABIL-ir
read-ABIL-PERF AUX-ABIL-AOR
'He might have been able to read.' (Cinque 2001, (10c))

c. Belki bunca zamandan sonra birbirimizi
perhaps so.much time after each.other
tanı-ya-ma-yız
recognize-ABIL-NEG-1PL
'Maybe we won't be able to recognize each other after all this time.'
(Göksel and Kerslake 2005, (94) p346)

In sentence (164-a), two ability suffix are combined on the same verbal stem. Unsurprisingly, the outer suffix is interpreted as epistemic and the inner one as participant-internal. The epistemic verbal construction *olabilir* in sentence (164-b) has an embedded verbal stem with the ability suffix and sentence (164-c)

exemplifies a combination with the epistemic adverb *belki*. All those examples are interpreted with the epistemic item having scope over the participant-internal one.

Epistemic and participant-external

I will first present some combinations involving the epistemic modal adverbs. Those adverbs have sentential scope and express the speaker's judgment. All the combinations in example (165) have thus an epistemic adverb with scope over a participant-external modal.

(165) a. Herhalde daha çok çalış-malı-sın
perhaps more work-NEC-2SG
'Perhaps you should work harder.' (Corcu 2003, (7))

b. Bunlar-dan daha sonra söz et-meli belki
these-from much later remark AUX-NEC perhaps
'Maybe those should be mentioned later.' (Corcu 2003, (17))

c. Herhalde taşın-ma-mız gerek
perhaps move-INF-1PL.POSS necessary
'Perhaps, we must move.' (Corcu 2003, (18))

The first two sentences, (165-a) and (165-b), contain respectively the adverbs *herhalde* and *belki* and the participant-external suffix *-mAlI*. The last example is a sentence with the lexical item *gerek*. The following sentence exemplifies a different type of combination with the epistemic verbal construction *olabilir*.

(166) Hasan oku-yabil ol-ABIL-ir
Hasan read-abil AUX-ABIL-AOR.
'Hasan might be allowed to read.' (Margreet Dorleijn, p.c.)

All the epistemic verbal constructions have scope over participant-external elements. Finally the two suffixes *-mAlI* and *-(y)Abil* can be combined to yield an epistemic over participant-external reading (see also (168-b)).

(167) dans ed-ebil-meli-siniz
dance do-ABIL-NEC-2PL
'You must be allowed to dance!'

Participant-external and participant-internal

The markers for participant-internal modality *-(y)Abil* and *-(y)A* combine with the lexical construction with *gerek* but also with the suffix *-mAlI* in agreement with figure 2.6.

(168) a. Rusya'yı oku-yabil-me-si gerek-iyor.
Russian'ACC read-ABIL-INF-3SG.POSS necessary-IMPF

'It's necessary to be able to read Russian.'

b. oku-yabil-meli-yiz
read-ABIL-NEC-1PL
'We must be able to read.' (Margreet Dorleijn, p.c.)

As expected, the interpretation follows the scope order participant-external > participant-internal and the Turkish modal system can be said to respect the general scope hypothesis for modality.

2.6 Tuvaluan

Tuvaluan is a Polynesian language belonging to the Samoic-Outlier subgroup and mainly spoken in Tuvalu (former Ellice Islands, consisting of nine islands). It has few morphological processes and can therefore be considered an isolating language.

Tuvaluan is a prepositional language, i.e. the noun precedes the adjective and the head precedes the relative clause and its basic word order is VSO (although word orders such as OVS and SV(S)O are also possible, in particular to mark focus or topic). In VSO sentences, an ergative-absolutive pattern of case marking is used (marked by prepositional markers):

(169)

V	S		O	
Intransitive Verb	$\emptyset/a$ ABS	Subject		
Transitive Verb	*nee* ERG	Subject	$\emptyset/a$ ABS	Direct Object

The general pattern is that the ergative preposition marks the post-verbal subjects (and pronominal traces) of transitive verbs whereas the transitive subject in preverbal position is marked for the absolutive case. Direct objects are always marked for absolutive case (i.e. even in preverbal position).

(170)

S		V	(S)		O	
$\emptyset/a$ ABS	Subject	Transitive Verb	nee ERG	trace	$\emptyset/a$ ABS	Direct Object

Tuvaluan has several possibilities for subordination. I will only present three of those constructions; the ones that are used in raising constructions. The choice of the strategy of subordination is dependent on the matrix verb used. Raising verbs (among which are the modal verbs) select the following types of complements (all of which are verb-initial). The first type is marked by the complementizer *o* which introduces a non-finite sentential complement. Most examples in this section use this strategy. The second marker is the subjunctive complementizer *kee* which can

be used interchangeably with *o* (with subtle syntactic and semantic differences) and also introduces non-finite complements, see (186-a). Finally the subordinate clause can be apposed to the right of the superordinate clause, the complement clause is then finite, see for instance (186-a) and (194). The language lacks a passive and an anti-passive construction.

The Tuvaluan language has a set of negators able to express sentence as well as constituent negation (Besnier 2000, p177). The negators follow the tense-aspect markers, conjunctions and the possible complementizers. The only hard constraint is that the negator must precede the negated element. Of course, this doesn't mean that all the material following the negator is negated.

> [T]he scope of sentence negation is context-dependent, insofar as the same construction can be used to negate entire propositions, or just the verb, or particular constituents. (Besnier 2000, p181)

This is illustrated by the following example,

(171) Au seki fano ki Fiiti i ttausaga koo teka
1SG NEG go to Fiji in the.year INC roll
'I didn't go to Fiji last year. [Rather, I stayed here]'
or 'It wasn't Fiji I went to last year.'
or 'It wasn't last year that I went to Fiji.' (Besnier 2000, (967) p181)

Tense, aspect and mood can be expressed though preverbal particles. For instance a quite frequent aspect particle is *koo*, the inchoative/perfective particle. The particle *e* is for instance used for universal tense (non-past), present tense as well as for the future as in (172-a), *ne* is the past particle and *kaa* and *maa* are used for the future as in (172-b) and (172-c) respectively.[63]

(172) a. Koe e fano maataeao.
2SG NPAST go tomorrow
'You're leaving tomorrow.' (Besnier 2000, (2453) p476)

b. Koe kaa fano maataeao.
2SG FUT go tomorrow
'You'll be leaving tomorrow [if everything goes well].'
(Besnier 2000, (2454) p476)

c. Koe maa fano maataeao.
2SG PRC go tomorrow
'You might be leaving tomorrow [if you don't prevent it].'
(Besnier 2000, (2459) p477)

Finally, Tuvaluan has a raising rule that is triggered by a restricted set of verbs

[63]Notice that Besnier (2000, (1.4.6) p.187) dubs *maa* the precautionary mood marker due to its negative connotation.

(among other modal and aspectual verbs).[64] The raising rule is optional, which is a common feature of the raising rules of the Polynesian languages discussed in (Chung and Seiter 1980). A quite unusual feature of the rule is that it "can target noun phrases of any grammatical role and may assign to the raised noun phrase a wide variety of grammatical cases in the superordinate clause" (Besnier 1988, p748).[65] The following examples show a raised transitive subject in (173-a) and a raised oblique argument in (173-b) (for a raised intransitive subject and its non-raised equivalent, see (176)).

(173) (Besnier 1988, (21c) and (21e) resp.)

a. Koo ttau *Niu* o ssala (nee ia) tena manuia
INC must Niu COMP look.for ERG 3SG his luck
'Niu must go and seek his fortune.'

b. Koo ttau *iaa Niu* o faipati au ki ei
INC must at Niu COMP speak 1SG to ANP
'I must have a word with Niu.'

This feature sets it apart from the other Polynesian languages which can either only target subjects (Samoan, Tongan) or subjects and direct objects (Niuean) (Chung and Seiter 1980, p626-628). Notice that the case marking in the superor-

[64] A 'comparable' set of verbs triggers a raising rule in other languages of the Polynesian family as shown in (Chung and Seiter 1980) for Samoan of the Samoic-Outlier and for Tongan and Niuean of the Tongic family.

[65] It should be noted that the raising analysis proposed by Besnier (2000) (based on (Besnier 1988)) has been contested by (Otsuka 2001). Otsuka (2001) argues along the line of (Otsuka 2000) (for Tongan) that the phenomenon at hand is a case of (empty) operator movement and that the 'raised' NP is actually base-generated as the matrix subject, that is, she argues for the following structure:

(i) V NP_i [OP_i [V pro_i NP]]

I will however keep the raising analysis for the following reasons. First, (Otsuka 2001) does not refute the different points of the argumentation of (Besnier 1988) in favour of a raising analysis (i.e. i. the raised NP originates in the subordinate clause, ii. the raised NP is a surface argument of the superordinate clause and iii. the raising rule is not a deletion rule), although she posits an analysis that is clearly incompatible with them. Second, Otsuka (2001) acknowledges that most of the problematic data that she presents for raising would not be accounted for by the operator movement analysis either. Third, notice that even under an operator movement analysis the NP that is base-generated as argument of the modal wouldn't need to be the subject of the complement clause but could as well be an oblique argument as in (173-b). This is problematic in its own right as an NP generated from a fixed position should not vary for case (Otsuka 2001, p353) as happens in (173-a) with the absolutive and (173-b) with oblique case. Most importantly, both analyses do not give support to a semantic analysis of those sentences in term of control à la Brennan (1993) which would need the raised argument to be the subject of the embedded clause (and not an oblique argument as in (173-b)). Finally, raising/operator movement is clearly optional and a sentence with, for instance, the modal verb *ttau* and a sentential complement is grammatical. This would, for the same reason, be highly problematic for a treatment of dynamic modality in Tuvaluan as proposed in (Brennan 1993).

dinate clause is partly determined by the raising verb itself (Besnier 2000, p113) and partly by the semantic constraints in (174).[66] For instance, the following table shows which modal verbs allow for ergative and absolutive case marking (modified from (Besnier 1988, p761)).

	nee ERG	$\emptyset/a$ ABS
kkafi 'capable'	+	+
mafai 'possible'	+	+
iloa 'know how to'	+	+
maua 'able to'	+	?
ttau 'must'	-	+
talia 'allow'	+	+

(174) (Besnier 1988, p766-767)

(1) "[T]he more oblique the noun phrase in the subordinate clause, the less likely it is to be raised,"

(2) "the more oblique the noun phrase in the subordinate clause, the more obliquely marked it will be once raised to the superordinate clause."

In this section, all the examples without explicit references to their origin have been checked with my informant, Niko Besnier.

2.6.1 Tuvaluan modal system

Participant-internal modality

The participant-internal sub-system can be split up in two distinct parts. The first part consists of the items specialized for participant-internal modality: the lexical verb *iloa* and the modal verb *kkafi*; the second part consists of the modal verbs *maua* and *mafai* that have a participant-external interpretation as well.

Participant-internal	
Lexical verbs	Modal verbs
iloa	*kkafi*
	mafai
	maua

[66]This is probably one of the most unusual features of Tuvaluan raising. In particular, it contrasts sharply with the analysis proposed in (Seiter 1980) for Niuean. According to Seiter (1980), the (intransitive) raising verb *kamata* 'begin' takes a sentential subject. The raising rule takes this structure as argument. The subject or direct object is then raised and bears the grammatical relation that was attributed to the whole sentential complement, i.e. subject, and therefore gets marked as absolutive.

The verb *iloa* expresses 'to know/to know how' and is used to express both learned (sentence (175-a)) and internal ability (sentences (175-b) and (175-c)).

(175) a. E iloa nee ia o faipati faka-Eelise...
NPAST know-how ERG 3SG COMP speak in.way.of-Ellise
'She can speak Ellicean...' (Besnier 2000, (877) p164)

b. E iloa katoa o kkake tamataene Tuuvalu
NPAST know all COMP climb young.man Tuvalu
'Tuvaluan young men can all climb [trees].'
(Besnier 2000, (1329) p253)

c. Te tamaliki teena koo iloa o fano...
the child that INC know COMP go
'That child is able to go...' (Besnier 2000, (2587) p501)

The verb *kkafi* 'can' (but also 'to contain') is used for physical ability (also called dispositions by Hackl (1998)). As example (208) will show, physical ability goes hand in hand with a lack of control of the agent on the action denoted by the verb phrase. This might come as surprising in example (176) where the action is about climbing a coconut tree. However, the lack of control means that if you were to question this ability (How come he can climb a coconut tree?), the answers would be that he can do it because he can do it! Namely, he has two legs, two arms, etc., and therefore is capable of climbing a tree. The modal verb is often used with negation (Besnier 2000, p501) as in sentences (179-b). *Kkafi*, as the other modal verbs, is a raising verb, as is shown in (Besnier 1988). As I already mentioned, raising is optional and therefore both (176-a) and its raising equivalent (176-b) are grammatical.

(176) 'Niu is capable of climbing to the top of the coconut tree.'
(Besnier 1988, (10a-b))

a. E kkafi [o kake Niu ki luga i te niu
NPAST capable COMP climb Niu to top at the coconut.tree
teelaa]
that

b. E kkafi nee Niu [o kake ki luga i te niu
NPAST capable ERG Niu COMP climb to top at the coconut.tree
teelaa]
that

Now we turn to modal verbs that can express participant-internal as well as participant-external meaning. The first verb is *mafai* and is translated as 'can.'

(177) a. E mafai katoa o kaitaua au kia laatou
NPAST can all COMP angry 1SG to 3PL

'I can get angry at them all.'[67] (Besnier 2000, (1330) p253)

b. E mafai katoa o faka-t(t)agi nee au tamaliki kolaa
NPAST can all CNT CAUS-cry ERG 1SG child those
'I can make all those children cry.' (Besnier 2000, (1334) p254)

The second modal verb is *maua*. It can express learned and physical ability and its non-modal meaning is 'have, get, obtain, acquire.'

(178) Ttamaliki teenaa koo maua nee ia o saasaale
the.child that INC can ERG 3SG COMP walk
'That child can already walk.' (Besnier 2000, (2584) p500)

NEG ation takes scope over all the participant-internal modals. The interpretation follows the surface order, i.e. 'not able to.'

(179) a. E see iloa nee ia o faipati faka-Eelise...
NPAST NEG know-how ERG 3SG COMP speak in.way.of-Ellise
'She can't speak Ellicean...' (Besnier, p.c.)

b. ...see kkafi nee au o sau ki luga
NEG capable ERG 1SG COMP lift to up
'[The suitcase is too heavy,] I can't lift [it] up.'
(Besnier 2000, (562) p102)[68]

c. Koe e see mafai o puli i au
2SG NPAST NEG can COMP forgotten at 1SG
'I cannot forget you.' (Besnier 2000, (2350) p459)

d. E see maua o too taku moe
NPAST NEG get COMP fall my sleep
'I cannot fall asleep.' (Besnier 1988, (28a))

Of course, a negation can be present in the embedded clause to express 'able not to' as in the following example:

[67]The different classes of Tuvaluan pronouns (personal, possessive, demonstrative and relative) are arranged along a (mandatorily marked) three-way number distinction: singular, dual or plural. Furthermore, a distinction is made between inclusion and exclusion (of the addressee) for 'non-singular numbers in the first person' (Besnier 2000, p380). The following table represents the simple paradigm of personal pronouns (Besnier 2000, table 2.3 p386),

	First-person inclusive	First-person exclusive	Second person	Third person
Singular		*au*	*koe*	∅, *ia*
Dual	*taaua*	*maaua*	*koulua*	*laaua*
Plural	*taatou*	*maatou*	*koutou*	*laatou*

For instance, *taaua* stands for 'you and I', whereas *taatou* stands for 'you and I and someone else', *maaua* for 'I and someone other than you' and *maatou* for 'I and at least two other than you.'

[68]Also as (Besnier 2000, (2588) p501).

(180) E kkafi nee ia o see faka-takavele nee au
NPAST capable ERG 3SG COMP NEG CAUS-defeated ERG 1SG
'He is capable of not getting defeated by me.' (Besnier 1988, (25a))

Participant-external modality

This category can be split up in three different parts. The first one consists of the Tuvaluan modal verbs that are able to express all the spectrum of participant-external modality (the possibility modals can also express participant-internal modality). The second part consists of modal verbs expressing deontic modality only (mainly borrowings of Samoan). The last part consists of a mood marker for 'advice' and deontic modality.

	Participant-external	
	Deontic	Goal-oriented
Subjunctive marker	*kee*	
Modal verbs	*mafai*	*mafai*
	maua	*maua*
	ttau	*ttau*
	saoloto, *taga*, *talia*	
	tapu	

Modal verbs: full range of meanings The modal verbs *mafai*, *maua* and *ttau* can express all the shades of participant-external modality, i.e. deontic as well as goal-oriented modality. Sentences (181-a) and (181-b) show the possibility modals *mafai* and *maua* in their permission reading, meaning 'allowed to,' and sentence (181-c) exemplifies the necessity modal *ttau* in its obligation reading.

(181) a. Koo see maua nee au o aasi atu mo koo ita
INC NEG can ERG 1SG COMP visit DEIC because INC displeased
mai tootou kaaiga
DEIC 3PL.POSS family
'I am no longer allowed to visit you because your relatives are angry at me.' (Besnier 2000, (2585) p500)

b. A ko ia laa koo fia vau ki ei, a koo see mafai
and FOC 3SG then INC want come to ANP but INC NEG can
laa...
then
'He then wanted to come along, but it wasn't allowed...'
(Besnier 2000, (2581) p500)

c. Koo ttau o taa nee Vave a ia loa.
PAST must COMP strike ERG Vave COMP 3SG indeed
'Vave must kill himself.' (Besnier 2000, (1119) p210)

Notice in particular that *maua* and *mafai* combine again with the negation in a transparent way, i.e. the interpretation follows the surface order.

Those verbs can also express non-deontic participant-external modality as the following example shows.

(182) Konei mea kolaa e mafai o gaalue ei taatou moo
these thing those NPAST can COMP work ANP 1PL.I in.order.to
manuia tino o ttou kaaiga
lucky people of 1PL.I.POSS family
'These are [some of] the things we can work [on] so that the members of our families have a good [life].' (Besnier 2000, (512) p92)

Sentence (182) exemplifies the use of *mafai* in goal-oriented sentences but the sentence could as well contain *maua* for another possibility reading or *ttau* for a necessity reading. The more traditional form of goal-oriented sentences, involving a want-conditional, is also possible with all three modal verbs.

(183) a. Kaafai e fia fano koe ki Tuvalu, koo ttau koe o fano
if NPAST want go 2SG to Tuvalu INC must 2SG COMP go
i te vaka nei
on the ship this
'If you want to go to Tuvalu, you have to board this ship.'

b. Kaafai e fia fano koe ki Tuvalu, koo maua/mafai koe
if NPAST want go 2SG to Tuvalu INC can 2SG
o fano i te vakalele nei
COMP go on the plane this
'If you want to go to Tuvalu, you can take this plane.'

Finally, *ttau* can be used to express weak necessity (wish, advice), as in (184-a), and it combines with negation, by taking wide scope over it, i.e. to mean 'must not' as example (185) shows.

(184) a. Maaloo o te lalolagi koo ttau o fusi fakatasi.
government of the world INC must COMP unite together
'The world's governments should all unite.'
(Besnier 2000, (2478) p481)

b. Moonise koo ttau o aavaga kia Evotia
Monise INC must COMP marry to Evotia
'Monise should get married to Evotia.'
(Besnier 2000, (2343) p458)

(185) a. A mea konaa see ttau o faippatigina peelaa
CNT thing those NEG must COMP speak.TR thus
'These things must not be talked about like that.'
(Besnier 2000, (259) p46)

b. Koe see ttau lele eiloa o faipati ki ei.
2SG NEG must at-all indeed COMP speak to ANP
'You must not speak to her at all.' (Besnier 2000, (1025) p191)

Notice that in sentence (185-a), the subject of the transitivized (by the transitivizer *-gina*) verb is unexpressed. This construction is often used to express a general obligation reminiscent of the 'ought-to-be' interpretation of deontic modals of (Feldman 1986).

Modal verbs for deontic modality The first specialized modal verb for deontic modality is *tapu*. It expresses an interdiction. As example (186-b) shows, it can take a noun phrase as subject.

(186) a. Koe koo tapu koe kee/e toe faipati i loto i te
2SG INC forbidden 2SG SBJ/NPAST again speak in inside in the
maneapa o te fenua
maneaba of the island.community
'You mustn't speak again [publicly] in(side) the island community's maneaba.' (Besnier 2000, (314) p55)

b. E tapu kkii loa sau tusi kiaa Vave.
NPAST forbidden very indeed 2SG.POSS letter to Vave
'You are not to write to Vave.' [lit.: 'A letter of yours to Vave is strictly forbidden'] (Besnier 2000, (1020) p190)

The other three verbs, *talia*, *taga* and *saoloto*, are all borrowings from Samoan expressing permission with subtle differences in meaning. First, the transitive modal verb *talia* meaning 'to allow, allowed, can.' In its non-modal use, this verb means 'to accept, to receive' (Besnier 2000, p503).

(187) a. Ne talia eiloo nee laatou a Ppaalagi kee mmai o
PAST allow indeed ERG 3PL CNT Westerner SBJ come COMP
fakatuu telotou koloa i konei
CAUS.stand 3PL.POSS goods in here
'They allowed the white people to come and establish their store here.' (Besnier 2000, (2599) p503)

b. Seiloga kee maua sau pepa folau, koo talia ei koe
not.unless SBJ get 2SG.POSS paper travel INC allow ANP 2SG
o fano i te vakalele
COMP go in the plane
'You won't be allowed to board the plane unless you have travel documents.' (Besnier 2000, (559) p102)

The two arguments of the modal are (standardly) an ergatively marked subject and a 'direct object' complement clause as in (187-a). However, the subject of the

subordinate clause might be raised in object position of the superordinate one as in (187-b). In the same manner as example (185-a), the subject of the modal can be left unexpressed giving right to a 'generic' permission reading as in (187-b), i.e. an 'allowed'-reading. Finally, it combines with negation in a transparent way.

(188) a. E see talia nee ia kee taa nee tena aavaga
NPAST NEG allow ERG 3SG COMP strike ERG 3SG.POSS spouse
'She does not allow her husband to strike [someone else].'
(Besnier 2000, (276) p49)

b. Koo see toe talia nee au kee foki mai koe ki au me
INC NEG again allow ERG 1SG SBJ return DEIC 2SG to 1SG COMP
iaa koe e maasei
COMP 2SG NPAST bad
'I won't allow you to come back to [see] me because you're [a] bad [person].' (Besnier 2000, (286) p51)

The second verb is the intransitive modal *taga* which means 'allowed, permitted.' The difference in meaning with *talia* is that this one "refers frequently to legal or customary permission that results from an interdiction being lifted" (Besnier 2000, p503). In the following sentence it is used with a nominalized clause. It can also be used with the usual *o*-subordination.

(189) Au koo taga i te inu kava
1SG INC allowed in the drink liquor
'I am of drinking age.' (Besnier 2000, (2602) p503)

Finally, the intransitive verb *saoloto* is used in legal contexts and means literally 'free.'

(190) E saoloto ki loto i te maneapa.
NPAST free to middle in the maneaba
'[He] is allowed inside the maneaba.' (Besnier 2000, (2605) p503)

I have not found examples of the last two modals with negation but I see no reason to expect any other interpretation than 'not allowed.'

Mood marker The debitive, subjunctive marker *kee* can be used to express orders and advice as 'should' (it is also used in imperatives). It takes scope over negation and cannot be used in goal-oriented sentences.

(191) a. Ioane kee manatua mai nee ia au ...
Ioane SBJ remember DEIC ERG 3SG 1SG ...
'Ioane should think of me when...' (Besnier 2000, (2575) p499)

b. Koe kee see faipati ki ei
2SG SBJ NEG speak to ANP

'You should not speak to her.'

The mood marker commits the speaker to (agreeing with) the source of the advice or order, i.e. it is performative in the sense of (Nuyts 2001).

Epistemic modality

	Epistemic	
Lexical verbs	Modal verbs	Adverbs
iku	*ttau*	*kaati*
	ailoga	*aati*
	taumate	*laa*

Epistemic modality can be expressed both with verbs and adverbs. There are two markers for epistemic necessity: the verb *iku* 'come to a conclusion, end up' (interpreted as epistemic/inferential 'must') and the modal verb *ttau*. The verb *iku* can take an *o*-complement clause, as in (192-a), or a finite apposed clause as in (192-b).

(192) a. E iku o vaia te penitiini.
NPAST end-up COMP watery the benzene
'The petrol must have water in it.' (Besnier 2000, (2578) p499)

b. Telotou vaka e iku e nofo i loto i te manu.
3PL.POSS canoe NPAST end-up NPAST stay in inside in the school
'Their canoe must be in the middle of the school of bonitos.'
(Besnier 2000, (2579) p499)

c. Koo ttau o lima sefulu ana tausaya
INC must COMP five ten 3SG.POSS years
'He must be 50 years old.'

The other two modal verbs, *see taumate* 'probably' and *ailoga* 'unlikely', express a (negative) notion of probability. The verb *taumate* which is a Samoan borrowing can only be used in combination with negation with the meaning 'probably', 'it's not unlikely.'

(193) E see taumate koo ne matea nee koe te vaegaa aamioga
NPAST probable PERF see ERG 2SG the kind+of behaviour
teenaa.
that
'You probably have witnessed this kind of behaviour.'
(Besnier 2000, (1008) p188)

(194) E ailoga laa koe e fano i te vaka nei
NPAST unlikely then 2SG NPAST go on the ship this

'It's unlikely that you'll be leaving on this boat trip.'
(Besnier 2000, (295) p52)

Sentence (194) also contains the downtoner *laa*. This adverbial hedge is postposed to the material it modifies and is sometimes translated as *then*. It can by itself have an epistemic reading, as in (195), but is often associated with other epistemic items such as *ailoga* in (194) or the modal adverbs *kaati/aati*, as in (196-a) and (196-b) respectively.[69]

(195) Koo ffiu laa i koopai mo sua masi
INC tired.of perhaps at porridge and soup cabin.biscuit
'[She]'s probably had it with porridge and cabin biscuit soup.'
(Besnier 2000, (1546) p298)

Finally, the modal adverbs *kaati* and *aati* express epistemic possibility. Note that the use of the downtoner *laa* is not mandatory. Furthermore, sentence initial *kaati/aati* cannot appear in the scope of negation.

(196) a. Kaati ne soli tuulaafono laa,...
perhaps NPAST transgress law then
'Perhaps he had transgressed a law,...' (Besnier 2000, (249) p43)
b. Aati laa se vaegaa kaaiga peelaa e ppoi, nee?
perhaps then a kind.of family thus NPAST stage.fright right
'Perhaps stage fright runs in the family, right?'
(Besnier 2000, (2611) p505)

Conclusion

	Participant-internal	Participant-external		Epistemic
		Deontic	Goal-oriented	
Adverbs				*kaati/aati*
				laa
Verbs	*iloa*	*mafai*	*mafai*	*iku*
	kkafi	*maua*	*maua*	*ailoga*
	mafai	*ttau*	*ttau*	*ttau*
	maua	*saoloto*, *taga*, *talia*		*taumate*
		tapu		
Mood marker		*kee*		

[69]It can also modify imperatives, shifting their meaning from orders to suggestions (also in combination with polite downtoners, i.e. like English *please*):

(i) Vau laa!
come then
'[Why don't you] come [here]?' (Besnier 2000, (200) p35)

One of the main interesting issues concerning the Tuvaluan modal system is its use of raising verbs across types of modality, i.e. for participant-internal, external and epistemic modality. In particular, it shows that there is no necessary connection between the possible NP argument of the modal and the bearer of a particular ability, permission or obligation. Therefore, an analysis of participant-internal/external modality à la Brennan (1993) is not supported for Tuvaluan. Furthermore, the Tuvaluan modal system is not fully polyfunctional in the sense of (van der Auwera et al. 2005). The modal verbs that express participant-external possibility, such as *mafai* and *maua*, cannot be used for epistemic modality. However the necessity modal *ttau* can be used for both participant-external and epistemic modality.

2.6.2 Combinations of modal items

Epistemic and participant-internal modality

Combinations of the epistemic modal adverb *kaati* (and of the other adverbs) with participant-internal modality yield the expected scope order: epistemic modality over participant-internal.

(197) a. Kaati e/koo iloa nee ia o faipati
perhaps NPAST/INC know-how ERG 3SG COMP speak
faka-Eelise
in.way.of-Ellice
'Mayhe s/he can speak Ellicean.'

b. Kaati e/koo kkafi o kake laatou ki luga i te
perhaps NPAST/INC capable COMP climb 3PL to top at the
niu teelaa
coconut.tree that
'Maybe they are able to climb to the top of this coconut tree.'

c. Kaati e/koo mafai o ffuti nee Vave te paala
perhaps NPAST/INC can COMP pull ERG Vave the kingfish
teelaa
that
'Maybe Vave is able to catch that kingfish.'

d. Kaati e/koo maua nee Vave o saasaale
perhaps NPAST/INC can ERG Vave COMP walk
'Maybe Vave is able to walk (already).'

The adverbs are sentential adverbs and therefore cannot scope under the modal verbs, when in the same (superordinate) clause. They are also rejected when used in the embedded clause as in (198).

(198) #E kkafi o kaati kake laatou ki luga i te
NPAST capable COMP perhaps climb 3PL to top at the
niu teelaa
coconut.tree that

The same interpretation can be obtained with the epistemic modal verbs, as can be seen with *iku*, *ailoga* and *taumate* in sentences (199-a), (199-b) and (199-c) respectively.

(199) a. Vave e iku o iloa (nee ia) o faipati
Vave NPAST end-up COMP know-how ERG 3M.SG COMP speak
faka-Eelise
in.way.of-Ellice
'Vave must be able to speak Ellicean.'

b. E ailoga laa laatou e maua o kake ki
NPAST unlikely downtoner 3PL NPAST can COMP climb to
luga i te niu teelaa
top at the coconut.tree that
'It's unlikely that they are able to climb to the top of this coconut tree.'

c. E see taumate koo kkafi o kake laatou ki luga i
NPAST probable PERF capable climb COMP 3PL to top at
te niu teelaa
the coconut.tree that
'They are probably able to climb to the top of this coconut tree.'

It is however not possible to combine the modal verbs in the reverse order. The ungrammaticality of the sentences is not due to syntactic issues (the raising modal verbs can be combined) but is thus semantically motivated.

(200) a. #E iloa nee ia o ailoga e saasale
NPAST know-how ERG 3SG COMP unlikely NPAST walk

b. #E kkafi o iku o saasale Vave
NPAST capable COMP end-up COMP walk Vave

c. #E maua nee Vave o see taumate koo saasale
NPAST can ERG Vave COMP probable INC walk

We can thus conclude that epistemic modals have scope over participant-external ones.

Epistemic and participant-external modality

The first example, sentence (201), is a combination of the epistemic adverb *kaati* with the mood marker *kee*. The sentence is judged strange (Besnier, pc) as it

combines a marker for direct command *kee* and a marker for uncertainty *kaati*.

(201) ?Kaati koe kee faipati kiaa Vave
perhaps 2SG SBJ speak to Vave
'Maybe you should speak to Vave.'

The 'strangeness' of sentence (201) is due to the performative nature of the mood marker. That is, the speaker expresses with *kee* his opinion that something should be done. The modal adverb, having scope over the mood marker, blurs the interpretation by expressing a different opinion of the speaker (uncertainty).

The epistemic adverbs can be used with the verbs expressing all the nuances of participant-external modality as in (202) with *ttau* and *maua* in their deontic interpretation (notice that the sentences would also be correct without negation). The interpretation is then following the usual scope order, i.e. the sentences express an uncertainty about some participant-external modal. The combinations are also accepted for goal-oriented modal verbs as sentence (202-c) shows.

(202) a. Kaati koo see toe ttau foki au o toe vau kkonei
perhaps INC NEG again must also 1SG COMP again come to.here
'Perhaps I shouldn't really come back here again.'
(Besnier 2000, (258) p46)

b. Kaati e/koo see maua nee ia o aasi atu
perhaps NPAST /INC NEG can ERG 3SG COMP visit DEIC
'Maybe he is not allowed/able to visit (you).'

c. Kaafai e fia fano koe ki Tuvalu, kaati koo ttau koe
if NPAST want go 2SG to Tuvalu perhaps INC must 2SG
o fano i te vaka nei
COMP go on the ship this
'If you want to go to Tuvalu, maybe you'll have to board this ship.'

Finally, the adverb also combines with the modal verbs dedicated to deontic modality in the expected way, i.e. expressing an uncertainty over some permission or obligation.

(203) a. Kaati e/koo talia nee ia a laatou kee mmai
perhaps NPAST /INC allow ERG 3F.SG CNT 3PL SBJ come
'Maybe she does not allow them to come.'

b. Kaati e/koo tapu ia e fano ki Amsterdam
perhaps NPAST/INC forbidden 3SG NPAST go to Amsterdam
'Maybe he must not go to Amsterdam.'

The previous examples all show combinations involving the epistemic adverb. However similar combinations are also possible with the epistemic modal verbs *iku*, *ttau*, *see taumate* and *ailoga*.

(204) a. E iku e/koo ttau ia o fano ki Amsterdam
NPAST end-up NPAST/INC must 3SG COMP go to Amsterdam
'He must have to go to Amsterdam.'

b. E ttau see maua nee ia o aasi atu
NPAST must NEG can ERG 3SG COMP visit DEIC
'He must not be allowed to visit you.'

c. E see taumate koo talia nee ia a laatou kee mmai
NPAST probable INC allow ERG 3F.SG CNT 3PL SBJ come
'She probably doesn't allow them to come.'

d. E ailoga laa laatou e maua o kake ki
NPAST unlikely downtoner 3PL NPAST can COMP climb to
luga i te niu teelaa
top at the coconut.tree that
'It's unlikely that they are allowed/able to climb to the top of this coconut tree.'

The reverse order with a participant-external modal having scope over an epistemic modal verb is not possible. For instance, the modal verb *ttau* cannot scope over the adverb *kaati* as in (205-a). Furthermore the mood marker cannot scope over the epistemic modal verbs, as (205-b) and (205-c) show, and the participant-external modal verbs cannot scope over the epistemic one, as (205-d) and (205-e) show.

(205) a. #E ttau ia o kaati fano ki Amsterdam
NPAST must 3SG COMP perhaps go to Amsterdam

b. #Vave kee ailoga e faipati ki ei
Vave SBJ unlikely NPAST speak to ANP

c. #Kee iku o vaia te penitiini
SBJ end-up COMP watery the benzene

d. #E tapu koe e iku o faipati ki Vave
NPAST forbidden 2SG NPAST end-up COMP speak to Vave

e. #E ttau koe o see taumate koo faipati ki Vave
NPAST must 2SG COMP probable INC speak to Vave

Finally, combinations involving an epistemic modal verb and a goal-oriented one are interpreted with the first having scope over the second.

(206) a. Kaafai e fia fano koe ki Tuvalu, e see taumate koo
if NPAST want go 2SG to Tuvalu NPAST probable INC
ttau koe o fano i te vaka nei
must 2SG COMP go on the ship this
'If you want to go to Tuvalu, its probable you'll have to board this ship.'

b. #Kaafai e fia fano koe ki Tuvalu, koo ttau koe o
if NPAST want go 2SG to Tuvalu INC must 2SG COMP
iku o fano i te vaka nei
end-up COMP go on the ship this

Participant-external and internal modality

The last kind of combinations involve participant-external and internal modality. It also straightforwardly respects the scope order: external modal over internal one.

(207) Koo ttau koe o maua/mafai/iloa o faipati faka-Eelise
INC must 2SG COMP can COMP speak Ellicean
'You must be able to speak Ellicean.'

(208) ?Koo ttau koe o kkafi o kake ki luga i te niu
INC must 2SG COMP capable COMP climb to top at the coconut.tree
teelaa
that
'You must be capable of climbing to the top of that coconut tree.'
(Besnier 1988, (15a))

The combinations involving a participant-internal modal verb having in its subordinate clause a participant-external verb are judged ungrammatical,

(209) #E iloa/kkafi nee ia o ttau o faipati faka-Eelise

Conclusion

The scope order, epistemic > participant-external > participant-internal, is respected. The ungrammatical combinations of modal verbs are not ruled out on their syntactic properties but because of their interpretations.

2.7 Typological conclusions

There are a few points that we need to check. First it is time to assess whether the typology of modality of (van der Auwera and Plungian 1998) is supported by our data, in particular, if the distinction between participant-internal, participant-external and epistemic across a possibility/necessity divide makes sense. Of course, we will also address the problems of combination of modals and of polyfunctionality.

I will first detail the findings of the previous sections for each type of modality, then address the issue of the combination of modals and finally conclude with polyfunctionality.

2.7.1 Participant-internal modality

The category of participant-internal modality is a special one for several reasons. First, it has never been the center of attention in formal semantics (not as deontic of epistemic modality have been). Second, whereas the divide between possibility and necessity is quite clear for the other two categories, it is not obvious whether it is a relevant distinction for participant-internal modality (some have for instance argued that there is no dual to ability). I will now present the different shades of meaning that are covered by the term participant-internal.

Ability

Participant-internal possibility, or ability (for short), can be expressed from four different perspectives: as physical ability or disposition, as learned/acquired ability or know how, as circumstantial ability and finally as indeterminate between those three options, i.e. all-round ability.

All-round All-round ability is expressed by the following items: *kunnen* in Dutch, *sìxú, sìgán* in the Fongbe cluster, *ka-…-a* in Lillooet, *-(y)Abil* in Turkish and *mafai, maua* in Tuvaluan. It is the most general way to express that the participant can perform the action/accomplishment denoted by the verb phrase. All these modals can however express other types of participant-internal modality depending on the context or the type of the embedded verb phrase. Therefore, all-round modality is not so much a type as a non-specified reading expressing the ability to perform an action.

I would like to distinguish further between two types within this category even though the difference is not marked in the grammars of the languages at hand. The distinction is between generic and occasional abilities (Thomason 2005). Generic ability means that under some (not specified) conditions (i.e. opportunities) an action/accomplishment can be performed by the participant whereas occasional ability means that the action accomplishment can be performed under fixed and determined conditions.

Physical ability/disposition Although physical ability corresponds to the most basic meaning of participant-internal modality, it is difficult to explain precisely what it amounts to. The only modal items of our data set that are 'specialized' for physical ability are the Korean noun-verb combination *nŭnglyŏk issta* (literally 'capability exist'), the Turkish *kadir olmak* and *muktedir olmak* (*kadir* also means 'powerful, strong' and *muktedir* 'virile, potent') and the Tuvaluan modal *kkafi* (see example (176)). The special feature of the Tuvaluan modal verb is that it connotes an ability over which one has no explicit control (Besnier, pc).

(210) I can walk.

Why is sentence (210) true? Mainly because I have two functioning legs and so if I want to walk, I just do it! Basically, the modal verb *kkafi* imposes in sentence (176) a very coarse granularity on the action 'climbing to the top of a coconut tree' and expresses that Niu can perform this action in virtue of having the inherent attributes to do so (namely, legs, arms, strength...).

Notice that a modal verb like the Gungbe *sìgán* based on the root *gan* 'power, force' was in the beginning a physical ability modal.

learned/acquired ability, know how Learned ability and know how are the other basic type of participant-internal modality. The Fongbe cluster, Korean, Lillooet and Tuvaluan all have an item dedicated to this meaning. The difference between learned and acquired ability is not grammaticalized in any of the languages of the sample. Knowledge is usually considered as the basis of epistemic modality and not of participant-internal modality, but we are dealing with a special kind of knowledge: knowledge about (the execution of) actions. This suggests that a specific subpart of our knowledge is dedicated to actions (or more precisely to planning).[70]

However, just as for physical ability, learned and acquired abilities can be of a basic kind. There is therefore a distinction between learned abilities and know how. For instance, consider the fact that I can speak French. This is a typical example of acquired ability but at the same time I would be in much pain trying to explain how I do it. There is no sensible way to reduce 'speaking French' into smaller known parts that when combined form the ability to speak French. When the action can be seen as decomposable into smaller parts both learned/acquired and know how readings are possible.

Although this type of modality is a subtype of participant-internal possibility, it doesn't imply an all-round ability reading. This is illustrated by the following Gungbe example.

(211) a. Ùn nyɔ́n wè ɖú amon ùn má sìgán ɖú wè
1SG know-PERF dance dance but 1SG NEG can dance dance
éhé dìn
this now
'I know how to dance but I can't dance now.' [G] (Aboh, pc)

b. #Ùn sìgán ɖú wè amon ùn má nyɔ́n wè ɖú
1SG can dance dance but 1SG NEG know-PERF dance dance
'I can dance but I don't know how to.' [G] (Aboh, pc)

Sentence (211-a) shows that it is perfectly fine to know how to do something

[70]That participant-internal modality has to do with planning was also suggested in (Thomason 2005): "We have a very robust intuition that abilities are important in planning; in most practical cases when we are concerned to know whether we can do something, it is so that we can fit it into a plan."

without being able to perform it. However, the interpretation of the all-round modal *sìgán* is restricted to a dispositional reading (for instance, I cannot dance because my back hurts) or to a circumstantial reading (for instance, I have no time). The other way around is not possible as is exemplified in sentence (211-b). That is, I cannot claim to be able to dance (this time in an all-round reading) and at the same time say that I don't know how to do it.[71] This means that all-round ability do entail the 'know how' to do it.

Why would a language like Fongbe develope a learned ability/know how modal, and not Dutch or Turkish? I think the answer is quite easily motivated by the etymology of both possibility modals: *sìgán* for Gungbe and *kunnen* for Dutch (*-(y)Abil* for Turkish). On the one hand, the Dutch modal originates from a verb meaning 'to have the mental capacity, to know'[72] (Van Ostaeyen and Nuyts 2004, (16) p21), thus from a verb expressing precisely this kind of meaning (Turkish *-(y)Abil* comes from the verbal root *bil* of the verb 'to know,' see (Kornfilt 1997, p374) and (Schiering 2006)). In the diachronic process, the verb acquired the other shades of meaning of participant-internal modality but its presence blocked the development of a specialized element as it was possible to express this meaning all along. On the other hand, The Gungbe modal *sìgán* originates from two components: a verb for *sí-* and a noun meaning 'power, force' for *-gán*. Therefore the modal developed from a physical ability meaning to a wide-range ability modal. However, in the early stages of the process, the learned ability meaning was not covered by the modal. It was thus possible to recruit an item for this meaning and naturally, the verb *nyɔ́* 'to know' was the obvious candidate.[73]

Circumstantial Circumstantial readings are expressing that the action/event can be performed because of external factors. This does not mean that it should be qualified as participant-external modality. There are quite a few specialized items for this type of modality: Dutch *in staat zijn*, Korean *kil issta*, *yŏyu issta* and *yŏci issta*. The Dutch modal verb *kunnen* in sentence (212) is a typical example of a circumstantial reading of an all-round modal. The circumstantial reading is somehow forced by the use of the particles combination *wel even*.

[71]Notice that if it can be made explicit that I don't know how to dance this particular dance, the sentence makes sense (and entails that I know how to dance some other dance).

(i) Ùn sìgán ḍú wè amon ùn má nyɔ́n wè éhé ḍú
1SG can dance dance but 1SG NEG know-PERF dance this dance
'I can dance but I don't know how to dance this particular dance.' [G] (Aboh, pc)

[72]'*Mentale capaciteiten hebben, kennen.*'

[73]Of course, the development of the two Gungbe modal items can have been simultaneous.

(212) Ik kan je band wel even plakken maar ik weet niet
1SG can.SG your tire PART PART fix but 1SG know.SG NEG
hoe het moet.
how 3N.SG must
'I can/could fix your tire (now) but I don't know how to do it.'

This sentence makes clear that it is indeed possible to express that one has the circumstantial ability to do something (in this case, free time) without having the know how. Notice furthermore that although the Dutch language has no specialized modal for learned/know how ability, this meaning can be expressed through a construction involving the verb *weten* 'to know' (with the interesting use of the participant-external necessity *moeten*).

Participant-internal necessity

At first sight, it is difficult to distinguish participant-internal necessity from its participant-external counterpart. However, the Dutch, Fongbe, Korean and Lillooet languages all express this meaning. We can separate the four languages in two 'groups': first Dutch, Fongbe and Korean which use the same modal item for participant-internal necessity as for participant-external necessity (and more precisely goal-oriented modality) and second Lillooet which uses the same item for ability and participant-internal necessity.

The members of the first group do not have dedicated participant-internal necessity items and make use of their participant-external counterparts. This is probably the main reason why the reading is most often misinterpreted as participant-external modality. None of *moeten*, *ɖó-ná* and *-ya hanta* are specialized deontic items and therefore it seems fair to say that participant-internal necessity 'recruits' the modal items from goal-oriented modality. However, it is different from goal-oriented modality in that there is no goal to be reached. The following Dutch example should make this point clear.

(213) Jan moet plassen.
John must.SG pee
'John must pee.'

It has been argued by (Hackl 1998, 20-24) that the modal in sentences such as (213) containing an intentional agent (John) is not a dual of participant-internal possibility but is instead a goal-oriented modal.[74] The problem with this position is thus to determine which goal(s) is/(are) pursued by the agent. 'John pees in order to attenuate the pressure on his bladder' would be a possible candidate.

[74]Actually, Hackl (1998, p22) argues that (within Kratzer's framework) the modal has a bouletic ordering source (which he describes with purpose clauses). Recent investigations form (von Fintel and Iatridou 2004), (von Stechow, Krasikova and Penka 2004) and others have showed that such a treatment does not work.

Therefore, as a volitional agent, John chooses to pee in situations where his bladder is full. Sentence (213) would thus be true just in case John's bladder is full. The main problem with this line of reasoning is that it conflates two relatively close but not equivalent notions related to the agent: volition and control.[75] The most natural reading of sentence (213) is that, independently of John's volition, he has no control over the situation.

(214) Ik hoef niet te plassen.
1SG need.1SG NEG PREP pee
'I don't need to pee.'

Sentence (214) shows that negation can take scope over the participant-internal necessity in which case the participant is in control of the situation. All in all, the similarity of the interpretation of participant-internal and -external necessity accounts for the difficulty to disambiguate the readings but it also points to the solution: participant-internal necessity occurs when the participant has no control over the situation and there is no external goal.

On the other hand, Lillooet uses the same circumfix *ka...a* for participant-internal possibility and necessity. Interestingly, this circumfix is also used to express an accidental/suddenly reading. That explains its usual gloss in the literature as 'out of control.'

(215) a. ka-ʕʷə́-s-kan-a ta nʕúy'ttən-a
ka-burn-TR-1SG-a DET bed-DET
'I accidentally set my bed on fire.' (Davis et al. 2006, (48a))
b. ka-q'ək'ʷč-kán-a
ka-close.mouth-1SG-a
'My mouth got closed suddenly.' (Davis et al. 2006, (49a))

The 'out of control' reading of the circumfix is not exactly equivalent to the participant-internal necessity of the other group. It cannot be used for future events in which case Lillooet speakers select an auxiliary with the meaning 'going to.' Basically, If I predict that something is going to happen in the (near) future, it cannot be happening accidentally/suddenly. However a necessity reading is perfectly fine for generic events or past situations.

[75]The notion of control is grammaticalized in some languages. In Lillooet, for instance, the directive transitivizer *-ən* indicates that the agent has "full control over the action denoted by the verb" (Demirdache 1997, p101) (this is also the case for some intransitivizers). The important point is that the directive suffix cannot combine with the participant-internal circumfix. In Central Pomo (Mithun 1991, p519-520) the case marking of pronouns distinguishes between a patient-case pronoun and an agent-case pronoun. Unsurprisingly, verbs like hiccough, sneeze, vomit or choke take a patient-case pronoun marking lack of control.

Conclusion

The most important conclusion is that participant-internal modality definitely deserves to be a modality type of its own. Foremost because all languages have specialized participant-internal elements which would support the status of this category as an independent one. Notice however that there is no specialized modal for participant-internal necessity (the default participant-internal reading of the Lillooet circumfix *ka...a* being ability). Finally all languages except Lillooet have participant-internal modals that are used for other purposes.

2.7.2 Participant-external modality

The first remark about this category is that it can be split up in two main parts: deontic modality and goal-oriented modality. The languages of the sample have modal items used for both types.[76]

Deontic modality

	Permission	Obligation	Prohibition
Dutch	*mogen*, *toegestaan*	*verplicht*	*verboden*
Fongbe		*ní*, *dándán*	
Korean	*-to/myŏn cohta*, *hŏka issta*	*-ci anhŭmyŏn an toeta*, *ponpun ita*	
Lillooet	*nliʕʼʷc*, *nxʷʔan'*	*xʷəc'ən*	
Turkish	*izin verilmek*		*yasak olmak*
Tuvaluan	*saoloto*, *taga*	*kee*	*tapu*

Figure 2.7: Specialized items for deontic modality

As figure 2.8 shows, the following meanings are grammaticalized in the sample: permission with for example *mogen* in Dutch or *taga* in Tuvaluan; obligation with for instance the Fongbe mood marker *ní* or the noun verb combination *ponpun ita* in Korean; prohibition with Dutch *verboden* and Tuvaluan *tapu*.

The negation is standardly interpreted as having wide scope over permission whereas it can scope either under or above modals of obligation (though one modal item cannot do both).

Two noticeable features are the Korean 'conditional' construction of deontic modality and the Lillooet enclitic *-ka* which can express both obligation and permission.

[76] Although in regard to this point, the evidence of a use of the Lillooet deontic marker for goal-oriented readings is not decisive.

Goal-oriented modality

This type of modality has to do with planning and as such is also closely related to participant-internal modality. The goal is quite often expressed through a purpose clause or a want-conditional but when the context is clear, it does not have to be overtly realized.

Most goal-oriented systems (Dutch, Fongbe cluster, Turkish, Tuvaluan) have both a possibility and a necessity variant within the modal system. This is not the case for Korean which standardly uses a polite imperative in the possibility case. Finally, I have not found any evidence of a possibility reading in Lillooet.

Control vs raising

It has sometimes been argued in the literature[77] that there should be a distinction made in the English modal system between the raising modal verbs (epistemic and some deontic) and the control modal verbs (participant-internal and external).[78] Two languages of this sample definitely resist this kind of analysis of modal verbs: Dutch and Tuvaluan. First, Dutch deontic modals allow a non-verbal complement which is usually associated with raising constructions (Barbiers 2006, (36b)):

(216) Jan mag weg.
John may.SG away
'John is allowed to leave.'

This example would however fall under the control analysis of (Brennan 1993). Furthermore, although the behavior of participant-internal modals in English was an important motivation for a control analysis, their Tuvaluan counterparts (as well as most other Tuvaluan modals) are raising verbs:

(217) 'Niu is capable of climbing to the top of the coconut tree.'
(Besnier 1988, (10a-b))

a. E kkafi [o kake Niu ki luga i te niu teelaa]
NPAST capable COMP climb Niu to top at the coconut.tree that

b. E kkafi nee Niu [o kake ki luga i te niu teelaa]
NPAST capable ERG Niu COMP climb to top at the coconut.tree that

[77] (Jackendoff 1972), (Brennan 1993).

[78] Note that this analysis of English modal verbs has been criticized by among others (Wurmbrand 1999) and (Barbiers 2006).

2.7.3 Epistemic modality

One of the unifying features of the epistemic type is that all the languages have at least one adverb for epistemic possibility. Furthermore, those modal adverbs are strictly epistemic.

Dutch	Fongbe	Korean	Lillooet	Turkish	Tuvaluan
misschien	*bɔ̀yà*	*ama*	*sx̌ə̌k*	*herhalde*	*kaati*
wellicht	*vlàfò*	*ŏccŏmyŏn*		*belki*	
mogelijk		*hoksi*		*galiba*	

As for the other type of modality, the Lillooet epistemic enclitic *-ka* is able to express both necessity (by default) and possibility. This behavior is also attested for the Korean *kŏs ita*.

Finally it is interesting to notice that the distinction between possibility and necessity is probably less relevant for epistemic than for the participant-external modality. As I have just mentioned all languages have an adverb for epistemic possibility, but this is not the case for epistemic necessity. Furthermore, epistemic necessity seems to be closely related to evidentiality (in particular to inferential readings). The Turkish suffix *-mIş* can for instance be used as inferential (not based on direct evidence), and this is the core meaning of the Lillooet enclitic *-an'* (based on direct evidence). It has also been argued by (de Haan 2000) that the Dutch modal verb *moeten* can also have an evidential reading.

2.7.4 Combinations of modal items

Although not all logically possible combinations have been tested, the languages of the sample exemplify the following scope order:

Proposition 2.7.1. When in a grammatical sentence two modal items are present in the same clause [modal1 modal2] or in a subordinating construction [modal1 [modal 2]], the interpretation necessarily follows the scope order:

Epistemic > Participant-external > Participant-internal

I will work under the assumption that the remaining combinations also validate this scope order.

2.7.5 Polyfunctionality

The problem of polyfunctionality has been investigated from a cross-linguistic perspective in (van der Auwera et al. 2005).[79] In this study, 241 languages (with a sample bias for European languages) have been examined and a distinction has been established between three way categories of languages:

[79] I would like to thank Johan van der Auwera for pointing this out to me.

1. Fully polyfunctional: the language contains at least one polyfunctional possibility modal and one polyfunctional necessity modal.
2. Partially polyfunctional: the language contains a polyfunctional modal for either possibility or necessity but not both.
3. Not polyfunctional: there is no polyfunctional modal in the language.

Concerning the sample of six languages of this dissertation, we can conclude the following: Dutch, the Fongbe cluster and Turkish qualify as full polyfunctional languages whereas Lillooet is a not polyfunctional at all. Two languages are semi-polyfunctional: Korean and Tuvaluan (the first has a polyfunctional possibility modal *su issta*, the second a necessity one *ttau*). So far we can only conclude that

Full	Semi	None
Dutch	Korean	Lillooet
Fongbe cluster	Tuvaluan	
Turkish		

Figure 2.8: Polyfunctionality in the languages of the sample

although polyfunctionality would seem to be more represented in our sample, it is by no means a norm. I will therefore present the results of (van der Auwera et al. 2005, table 2 p255) in order to get a better cross-linguistic picture of this topic.

	Number of languages
Fully polyfunctional	49
Partially polyfunctional	54
Not polyfunctional	123

The table makes clear that more than half of the languages of the sample do not display any polyfunctionality. Actually this can be contrasted with the data from (Haspelmath, Dryer, Gil and Comrie 2005, Interactive Reference Tool) for the Indo-European family.

	Number of languages
Fully polyfunctional	21
Partially polyfunctional	8
Not polyfunctional	3

We can thus conclude with (van der Auwera et al. 2005) that polyfunctionality is typical of European languages (the three non-polyfunctional languages are not

European). All this confirms the fact that polyfunctionality is not a universal feature of modal systems and that a separation of the epistemic and participant realms is supported.