Modality in Mangap-Mbula: An Exploration of Its Syntax and Semantics

Robert Bugenhagen
The Australian National University
Summer Institute of Linguistics

1. INTRODUCTION

This paper presents the main features of the Mangap-Mbula[1] modality system, with particular emphasis on the irrealis realm, and is intended as a contribution towards the better characterization of that notion by exemplifying it in reasonable detail for a single language. Two free-form adverbial particles- *ko* 'uncertainty with regard to the factuality of a proposition' and *be* 'non-assertion of factuality'- and several forms derived from them are particularly important for encoding modality, as are the modal verbs *-so* 'say, intend, suppose, want, think' and *-rao* 'be adequate, able, obligated or permitted'. The lack of any explicit formal marking for modality is also relevant, encoding asserted certain factuality in declarative sentences.

Austronesian languages are often characterized as having a realis/irrealis distinction, and in Papua New Guinea, a number of AN languages have been so described. Dempwolff, in his grammar (1939) of Yabem makes an early reference to the notion, stating:

> But the Yabem verb is no "time word"; it lacks specific "tenses". Moreover, there is no distinction made between intransitive and transitive verbs, no causative and other derived forms, no passive construction. Rather, the only psychological idea formation that is expressed in the event is the attitude of the speaker to it, whether he is speaking of a reality or whether the act is presented to him as a picture (image). It is a difference of Real Mode and Imaginative Mode. (translation given in Capell (1971:288)

Later, Capell (1971:288) deemed the distinction an areal feature:

> A further feature of AN_2 languages worthy of attention is the general presence of a realis-irrealis distinction in the verbal systems, i.e., a basic distinction between actions which are regarded as actually occurring and actions which are merely thought about.

In recent years, a number of in-depth analyses of Papua New Guinea Austronesian languages have been published which describe the manifestation of this modal category. Three representative studies are Lichtenberk's (1983) grammar of Manam, Johnston's (1980) grammar of Nakanai, and Mosel's (1984) study of Tolai. If one examines the range of uses of the term irrealis by these three authors, it soon becomes apparent that "irrealis" covers a very heterogeneous grouping, both syntactically and semantically.

Lichtenberk, in his description of Manam makes reference to a realis-irrealis distinction in the verbal Subject prefixes, stating (181):

> Manam has two sets of the Subject/mood prefixes, which we have called 'realis' and 'irrealis' respectively. The realis-irrealis opposition is crucial to the Manam verbal system in the sense that every finite verb must be specified...for one of the two moods.

The following characterization of the opposition is given (183):

> The realis mood is used to express the fact of an event's (or a state's) (not) taking place (at the moment or generally) or (not) having taken place in relation to the time of the speech act or some other event. The irrealis mood, on the other hand, is basically used to express envisioned, imagined events, i.e., events that will (will not) take place in the future in relation to the time of the speech act or some other event, including commands, exhortations, and warnings, as well as counterfactual events, i.e., envisioned events whose contraries in fact took, or are taking, place.

Lichtenberk distinguishes three sub-types of irrealis, which he terms 'indefinite', 'definite', and 'prospective'. All three of these sub-types are encoded using irrealis Subject prefixes on the verb. The first and third sub-types are formally distinguished by the presence of additional particles in the clause: *masa* in the case of the indefinite irrealis and *?ana* in the case of the prospective irrealis. The indefinite irrealis is the most unmarked type semantically. It simply indicates (185) "that an event will (will not) take place in relation to the time of the speech act or

some other event." The definite irrealis: 1) indicates that an event is more likely to take place and has the implication that the event will take place in the near future, 2) is used to express commands, exhortations, and warnings, 3) is used to encode counterfactual events, and 4) expresses customary, habitual activities (187-189). Finally, the prospective irrealis is used to encode intention, imminence, and the fact that an event almost took place.

Johnston, in his grammar of the New Britain language Nakanai, makes reference to the modal notions of: 1) "non-imminent irrealis" (which is encoded by a particle *ge)* and 2) "imminent irrealis" (which is encoded by a particle *ga).* He also refers to a "dubitative" form *so(io)ge,* which appears to contain the non-imminent irrealis form *ge. Ge* is characterized in the following way:

> ...*ge* indicates an attitude that the action or state referred to is seen by the speaker as a matter of potential or unconfirmable fact, being in the realm of doubt, desire, intention, probability, the recalled past or the predicted future. (63-64)

The imminent irrealis *ga,* in turn,

> ...encodes the notion of imminent or frustrated action...A notion of frustrated or uncompleted activity is always present in the imminent mode. (64)

Since Johnston states that *ga* cannot be used in contexts of dubitative modalities (65), one can infer that there is an obligatory element of certainty involved in its meaning.

As a final illustration of some of the current uses of the term irrealis, I will cite Mosel's (1984) study of Tolai. There, she refers to an irrealis particle *gala,* which (113):

> indicates that the action, process or state denoted by the nucleus of a verbal phrase is not real, but that the wish exists that it occurs, that it would occur or would have occurred under certain conditions, which, however, are or were not fulfilled.

Imagination, counterfactuality, probability, degrees of certainty, commanding, customariness, imminence, potential factuality, frustration, and wishing, which are encoded in some instances by verbal affixation and in other instances by free particles, constitute quite a heterogeneous group. Considering this broad range, and

the fact that two of the authors have found it necessary to delineate different "types" of irrealis, the question arises whether or not "irrealis" can and should be treated as a single, coherent linguistic category. To me, the heterogeneity of the category seems to argue for its NOT being treated as a single category. Instead, more is probably to be gained by trying to decompose it into several more basic notions, which correlate directly with differences in formal encoding, and then trying to formulate how the different etic meanings of irrealis/realis are derived as products of these more basic categories.

In particular, it seems to me from the above descriptions and my own work on Mangap-Mbula that it is important to distinguish encodings of the amount of certainty that a speaker has regarding a proposition (epistemic modality), from encodings of a different parameter which, following Palmer (1986), I shall term factuality. I define a factual proposition to be one which the speaker takes as being true at some SPECIFIC time on or before the moment of utterance or some other deictic center.[2] A central tenet of this paper is that the common denominator of much of what comes under the rubric of "irrealis" is non-factuality, which is then modulated by other modal parameters including: 1) degree of certainty, and 2) whether the factuality is presupposed or asserted. The parameters of factuality, degree of certainty, and presupposition can be more explicitly represented using a controlled semantic meta-language such as is propounded in Wierzbicka (1980; 1987) as follows:

1) factuality:
"There was a time before now when:
if one said X,
one would say something true."

2) degree of certainty:
"I know", versus "I think", versus "I don't think", etc.

3) assertion versus presupposition:
"I say this because I want you to know something..."
versus the absence of such a component.

In the remainder of this paper, I describe the syntax and semantics of Mangap-Mbula modal forms, with particular emphasis on how the notions of epistemic certainty, factuality, and presupposition / assertion apply. The following constellations of these notions are observed to be formally distinguished: 1)

assertion of factuality; 2) non-assertion of factuality; 3) presupposition of factuality; 4) assertion of non-factuality; and 5) assertion of uncertainty regarding the factuality of a proposition. The forms to be discussed are given below in their order of occurrence:

be	'presupposed non-factuality'
be	'temporal subordinator'
tabe	'resultative conjunction'
ko	'uncertainty regarding factuality'
kola	'more certain future'
kokena	'negative desiderative'
kozo	'strong intention'
pepe	'prohibitive'
rimos	'cessative'
-rao	'adequate, able, permitted, obligated'
-so	'say, intend, desire, if'
Ø	(null marking) 'asserted factuality'

2. A BRIEF OVERVIEW OF MANGAP-MBULA GRAMMAR

Mangap-Mbula is an SVO language with nominative-accusative morphology, and its word order is relatively fixed except for left-dislocation of arguments for purposes of 1) contrastive emphasis, and 2) establishment or re-establishment of an argument as a discourse topic. Cf. examples (1) and (2)

(1) *Me t-io ti-kam ngge ta*
dog LOC-1S 3P-do/get pig SPEC
'My dogs got a pig.'

(2) *Ro t-iom n-iam am-pe-kel i*
leaf LOC-2P GIV-1P:EXC 1P:EXC-answer IM:REL
'Your letter, we are answering it.'

The major morphological processes are: 1) suffixation to indicate person and number of the possessor for inalienably possessed nouns, 2) cross-referencing on verbs for person and number of the clausal Subject, 3) reduplication of nouns and verbs for plurality, intensity, diminution, and imperfectivity, 4) causal and stative derivations of predicates, and 5) a small amount of compounding.

It is important to note that there is no morphological indication of tense or mode on Mangap-Mbula verbs. Absolute time reference is encoded via the use of clause final temporal and proximal adverbs. Declarative clauses lacking such adverbs are interpreted as having absolute past time reference, and as having a relative order of occurrence subsequent to preceding clauses. Clauses having falling final intonation and lacking the modal adverbs and adverbials discussed in this paper may be interpreted as having either declarative or imperative modality (assuming the lack of any WH-words).

3. MANGAP-MBULA MODAL ADVERBS

3.1. THE FUNCTIONS OF *BE*

3.1.1. General Remarks

Syntactically, the form *be* occurs in three distinct structural positions: immediately before the verb in main clauses (3):

(3) *N-io* *inggi* *be* *ang-la* *i*
GIV-1S DEM BE 1S-go IM:REL
'I am about to go.'

sentence initially in a main clause (4),

(4) *Ta-be* *n-io* *ang-re* *kembei* *ambai* *som*
SPEC-BE GIV-1S 1S-see like good NEG
'And so I considered it to not be good.'

clause initially in embedded clauses (5):

(5) *N-io* *ang-miu* *be* *kuinu-ng* *ang-re* *yom*
GIV-1S 1S-dream BE soul-1S 1S-see 2P
'I dreamt that I saw you.'

In the latter environment, it frequently acts as a complementizer introducing non-factual propositions.

The core meaning of *be* can, in most instances, be characterized as: non-assertion of factuality. Recall that by factuality, I mean that a speaker is assuming a proposition to refer to a specific event which has taken place on or before the moment of utterance or some other deictic center. Using a more basic semantic meta-language, we might characterize this typical meaning of *be* as:

be X
I do not say this because I want you to know something:
that there was a time before now when:
if one said X,
one would say something true.

In this definition, the scope of the negation is important. It is

I NEG [say this because I want you to know something:
There was a time before now when:
if one said X,
one would say something true.]

All the different uses of the form *be* exhibit this failure to assert factuality except one: when it occurs as a component of the result conjunction *tabe* 'And so...' Given this semantic divergence and the distinctive syntactic environment (sentence initial) of *tabe,* it seems necessary to postulate that the *be* here is a homonym of the more general one whose meaning is given above. This means, then, that there are two different *be* s in the language: be_1 'non-asserted factuality', and be_2 'asserted certain factuality'. The meaning of be_1 has already been given above. The modal part of be_2's meaning (that occurring in the resultative conjunction *tabe*) can be schematized as:

be_2 X (in *Ta-be*)
I say this because I want you to know something:
I know this:
There was a time before now when:
if one said X,
one would say something true.

The following sub-sections illustrate the various uses of be_1 and be_2, and then contrast be_1 with some other, semantically related forms. In the final sub-section, a possible historical origin for the form is discussed.

3.1.2. Non-factual Uses Of *Be*1 'non-asserted factuality'

*Be*1 is used to encode many different types of non-factual notions including:

1) imminence (6), (7):

(6) *N-io inggi be ang-zem yom i*
GIV-1S DEM NF 1S-leave 2P IM:REL
'I am about to leave you.'

(7) *Uraata t-io i-kaam be i-map*
work LOC-1S 3S-do/get+REDUP NF 3S-end
'My work is about to end.'

2) *be*1 in expressions of necessity (8)[3]:

(8) *N-u be-la le-m passport to la pa lele toro*
GIV-2S NF-go RECX-2S passport then 2S+go REF place other
'You must have a passport in order to go to another country.'

3) *be*1 introducing clauses of purpose (9):

(9) *N-iam am-le koozi be am-lek*
GIV-1P:EXC 1P:EXC-enter today NF 1P:EXC-bend

kumbu-yam pi-wi
leg-1P:EXC REF-2S

'We have entered today to bend our knees to you.'

4) *be*1 introducing complements following predicates encoding desire, or intention (10)-(11):

(10) *N-io lele-ng be ang-zem i som*
GIV-1S insides-1S NF 1S-leave 3S NEG
'I don't want to leave him.'

(11) *N-io* *ang-so-((m)be)* *ang-po* *ruumu* *popongana*
GIV-1S 1S-say-(NF) 1S-tie/build house new
'I want / intend to build a new house.'

5) *be*1 introducing complements following the higher predicate *-rao* encoding deontic modality / obligation (12):

(12) *Ta-na* *iti* *ta-rao* *(be)* *ti-siri*
SPEC-GIV 1P:INC 1P:INC-RAO NF 1P:INC-drive:away

ngge na som
pig GIV NEG

'Therefore we mustn't drive away the pigs.'

6) *be*1 in orders and commands, specifying the content of the command (13)

(13) *So* *pi-zin* *wal* *biibi* *be* *ti-uulu* *i*
2S-say REF-3P group big NF 3P-help 3S
'Tell the big group of people to help him.'

7) *be*1 introducing complements following the higher predicate *-rao* encoding ability (14):

(14) *I-yamaana* *kembei* *ni-ini* *ambai.* *I-rao* *(be)* *i-pa* *pa* *su*
3S-feel like being-3S good 3S-RAO NF 3S-walk REF bush
'He felt like he was well. He was able to go walking in the bush.'

8) *be*1 introducing complements following the higher predicate *-rao* encoding permission (15):

(15) *To* *teacher* *i-so* *i-rao* *(be)* *n-io* *ang-la* *tomini*
Then teacher 3S-say 3S-RAO NF GIV-1S 1S-go also
'Then the teacher said I could go also.'

9) *be*1 introducing complements encoding an individual's thoughts or words (16), (17):

(16) *N-i* *i-kam* *nggar* *be* *i-nggiimi* *le* *kar* *sa*
GIV-3S 3S-do/get thinking NF 3S-buy RECX car NON-SPEC
He is thinking that he will buy himself a car.'

(17) *N-i* *i-so-((m)be)* *"N-io* *ko* *ang-la."*
GIV-3S 3S-say-(NF) GIV-1S UC 1S-go
'He said, "I will go." '

10) *be*1 in counterfactual (18) and hypothetical (19) conditionals:

(18) *Zin* *be* *ti-kam* *uraata* *so* *ti-kam* *le-n* *pat*
3P NF 3P-do/get work say 3P-do/get RECX-3P stone/money
'If they had worked, they would have got paid.'

(19) *Zin* *ti-so-((m)be)* *ti-kam* *uraata*
3P 3P-say-(NF) 3P-do/get work

ina-ko *ti-kam* *le-n* *pat*
GIV-UC 3P-do/get RECX-3P stone/money
'If/Supposing they work, they will get paid.'

The non-factuality of examples (6)-(19) should be evident. In the case of imminence, though an event is just on the verge of occurring, it hasn't yet occurred, and so is non-factual. Statements regarding the obligation, ability, necessity, or permission to undertake a course of action do not assert that the course of action has taken place. To say that one's goal/purpose in doing something was X is different from asserting that one has actually done X. Thoughts, speech, and conditionals are also non-factual, since thoughts, words, and the worlds established by conditionals are removed from the "real" world, in which events must take place if they are not to be encoded using *be*1. Thus, in all these instances, the propositions containing or introduced by *be* do not refer to specific events which have eventuated in the real world. Encoding non-factual states of affairs, they not only fail to assert factuality (the semantic invariant of *be*1), but actually positively presuppose non-factuality. Thus, their meaning is:

I know this:
There was no time before now when:
if one said X,
one would say something true.

I do not say this because I want you to know something:
that there was a time before now when:
if one said X,
one would say something true.

3.1.3 Factual Uses of the Form *Be- Be*$_1$ 'temporal subordinator' and *Tabe*$_2$ 'result conjunction'

There is another use of the form *be*$_1$, in which it functions as a temporal subordinator. This use, however, encodes FACTUAL propositions, rather than non-factual ones. It is illustrated in (20):

(20) *...to* *ti-pet* *kar.* *Be* *ti-pet* *na*
then 3P-appear village. BE 3P-appear GIV

ti-re *ruumu* *ki-zin* *i-pol* *kek*
3P-see house LOC-3P 3S-collapse PERF
'...then they came to the village. When they arrived, they saw that their house had collapsed.'

In (20), the second clause is transparently factual. The event encoded has just been asserted in the immediately preceding clause. In natural text material such examples are relatively rare, clauses ending with *na* and lacking the *be* being much more common. Still, the existence of such examples proves that non-factuality is not part of the semantic invariant of the form *be*$_1$. What IS invariant, however, is the non-assertive nature of utterances encoded with *be*$_1$. This is in accordance with Palmer's (1986) observations regarding the link between "subjunctives" and subordination in many Indo-European languages. The meaning of this factual use of the form *be*$_1$ can be schematized as:

I know this:
There was a time before now when:
if one said X,
one would say something true.
I do not say this because I want you to know something:
that there was a time before now when:
if one said X,
one would say something true.

The final syntactic-semantic use of the phonemic form *be* is as a component of the sentence initial result conjunction *tabe* 'And so, with the result or outcome that'. As

was the case with the temporal subordinator use of *be*1, propositions introduced by *tabe* are factual, rather than non-factual. They differ, however, in being asserted, rather than presupposed. As an example, cf. (21):

(21) *N-io* *ang-re* *mooto* *singaanabi.* *Tabe* *ang-moto.*
GIV-1S 1S-see snake huge TABE 1S-be:afraid
'I saw a huge snake. And so I was afraid.'

Recall that the fact that propositions encoded with *tabe* are always assertive was one of the criteria for postulating that the *be* here is a homonymn of *be*1. The fact that the form *be* occurs as a constituent of a result conjunction is, perhaps, not too surprising, given the cross-linguistic tendency for forms encoding purpose and result to be conflated. Palmer (1986:182) states, "It seems that there is good case for believing that purpose and result are in a variety of languages, closely related and even indistinguishable, concepts." The nature of the semantic relationship seems to be that a purpose is an INTENDED result, while a result is ACTUAL.

3.1.4. *Be*1 Contrasted With Some Other Forms

*Be*1 exhibits minimal contrasts with three other types of forms which are modal in nature: 1) the factual complementizer *ta(u)*, 2) the negative adverbs *som* and *zen*, and 3) the adverb *ko* 'uncertain'. These contrasts help delineate *be*1's meaning more precisely.

It was noted above that *be*1 frequently acts as a complementizer introducing non-factual propositions. Examples (10)-(17) above illustrated this use. Complements conjoined with *be*1 are typically pronounced under the same intonation contour as the main clause, with no phonological pauses. Should a pause be present, it occurs immediately following the *be*1. For those complements immediately following the higher predicates *-rao* and *-so*, it is possible to omit the *be*1 with no apparent change in meaning; otherwise it is obligatory if one wants to encode a non-factual state of affairs.

NON-FACTUAL complements contrast formally with FACTUAL ones, since the latter have the possibility of being introduced by the form *ta(u)*[4] and are never introduced by *be*1. Factual complements encode specific events which are known to

have already occurred by the moment of utterance or some other deictic center and are not asserted. As an example of a factual complement, cf. example (22):

(22) *N-i*	*i-ute*	*ta*	*zin*	*ti-mar*	*kek*	*na*	*som.*
GIV-3S	3S-know	SPEC	3P	3P-come	PERF	GIV	NEG

'He didn't know that they had already come.'

The types of predicates permitting the factual complementizer *ta(u)* are: 1) perception predicates like 'see', 'feel', 'hear' and 2) some mental activity predicates like 'know' and 'recognize'. It is important to note that the factual complementizer *ta(u)* may be (and often is) omitted. What is significant is its POSSIBILITY of occurrence and the fact that the complements which it introduces may not be introduced by *be*$_1$. The meaning of complements introduced by *ta(u)* can be schematized as:

ta(u) X

I know this:
There was a time before now when:
if one said X,
one would say something true.

I do not say this because I want you to know something:
that there was a time before now when:
if one said X,
one would say something true.

Contrast this with the meaning of complements introduced by *be*$_1$:

be$_1$ X

I know this:
There was no time before now when:
if one said X,
one would say something true.

I do not say this because I want you to know something:
that there was a time before now when:
if one said X,
one would say something true.

It can be seen that these forms share their last, non-assertive components, but differ in their first, presuppositional components.

Since both *ta(u)* and *be*1 may be omitted, complements which are immediately juxtaposed without any explicit complementizer are ambiguous, potentially having either a factual (23), (24) or a non-factual (25)-(27) interpretation depending on the nature of the complementizing predicate:

(23) *N-io* *ang-ute* *Ø* *zin* *ti-mar* *zen*
GIV-1S 1S-know 3P 3P-come NEG:PERF
'I know they haven't come yet.'

(24) *N-io* *ang-re* *Ø* *zin* *ti-mar* *neeri*
GIV-1S 1S-see 3P 3P-come yesterday
'I saw them come yesterday.'

(25) *N-io* *ang-so* *Ø* *n-i* *ko* *i-mar* *kek*
GIV-1S 1S-say GIV-3S UC 3S-come PERF
'I think he has come.'

(26) *N-io* *ang-so* *Ø* *n-i* *ko* *i-mar*
GIV-1S 1S-say GIV-3S UC 3S-come
'I think he will come.'

(27) *N-io* *ang-so* *Ø* *n-i* *i-mar.*
GIV-1S 1S-say GIV-3S 3S-come
'I want him to come.'

Just as complements introduced by *ta(u)* and *be* contrast along the single dimension of factuality versus non-factuality, statements containing *be*1 and one or the other of the two clause final negators- *som* 'negative' and *zen* 'negative perfect'- contrast along the single dimension of presupposition versus assertion of non-factuality, with *be*1 typically being used to encode presupposed non-factuality of a state of affairs, and the clause final negators being used to ASSERT the non-factuality of a state of affairs. Partial semantic specifications of these negators would be:

X *som* / *zen*
I think this:
You think this:
There is a time when:
if one said X,
one would say something true.

I think this:
There is no time when:
if one said X,
one would say something true.

I say this because I want you to know something:
I think something different:
There is no time when:
if one said X,
one would say something true.

The relative complexity of this formula reflects the presùppositional complexity of negation. Givon (1984:324) states:

> The NEG-declarative speech-act is used to DENY [a proposition] P against the background of the hearer's presumed inclination to BELIEVE in P, believe in the likelihood of P or be FAMILIAR with P.
>
> ...In the NEG-declarative speech act, the two explicit assumptions are:
>
> (c) The hearer knows WRONG; and
> (d) The speaker knows BETTER."

Givon's assumptions (c) and (d) are reflected in the first two semantic components of the Mbula negators. The third component encodes the assertive nature of statements containing these forms.

As examples of these negators, cf. (28)-(30):

(28) *N-i* *i-mar* *som*
GIV-3S 3S-come NEG
'He didn't come.'

(29) *N-i* *ko* *i-mar* *som*
GIV-3S UC 3S-come NEG
'He won't come.'

(30) *Nggar* *ki-zin* *i-pet* *zen*
thinking LOC-3P 3S-appear NEG:PERF
'Their thinking hasn't appeared yet' or
'They don't understand yet.'

This sort of asserted non-factuality is clearly different from the non-asserted non-factuality of intentions, imminence, conditions, and the other uses of *be,* which has to be present underlyingly, as a presupposition, in order for such utterances to be felicitous. The distinction of presupposition versus assertion is captured in the semantic formulae for *be*1 and the negators via the use of "say..." versus "don't say...".

The third major component of *be*1's meaning- certainty- is best illustrated by contrasting it with the other major modal adverb in Mangap-Mbula: *ko.* Cf. (31)-(34):

(31) *Zin* *be* *ti-kam* *uraata* *so* *ti-kam* *le-n* *pat*
3P NF 3P-do/get work say 3P-do/get RECX-3P stone/money
'If they had worked, they would have got paid.'

(32) *Zin* *ti-so-((m)be)* *ti-kam* *uraata*
3P 3P-say-(NF) 3P-do/get work

ina-ko *ti-kam* *le-n* *pat*
GIV-UC 3P-do/get RECX-3P stone/money
'If/Supposing they work, they will get paid.'

(33) *N-i* *ko* *i-posop* *uraata* *ta-na* *kek*
GIV-3S UC 3S-finish work SPEC-GIV PERF
'He probably has / might have finished that work.'

(34) *Zin* *ko* *ti-kam* *uraata*
3P UC 3P-do/get work
'They will (perhaps) do the work.'

To felicitously utter (31), the speaker must be CERTAIN that people have in fact failed to work, i.e., that their working is a non-factual proposition. In examples (32)-(34), on the other hand, there is an element of tentativeness or uncertainty with regard to the factuality of the encoded propositions. They COULD be factual

or come to be factual, but the speaker is not committing himself/herself in any way to their truth value or factuality. Thus, conditions encoded with *ko* are merely hypothetical, encoding potential occurrence, while those encoded with *be*1 are counterfactual, with the presupposition that the protasis has definitely failed to obtain. *Be*1 can similarly be contrasted with modally unmarked main clauses, which encode asserted certain factuality, i.e. that a speaker is certain a specific event has taken or is taking place and is informing the hearer about it.

Summing up this sub-section, by contrasting *be*1 with: 1) factual complementizers, 2) clausal negators, and 3) the adverb *ko*, it can be seen that three of its important semantic components are: 1) non-factuality, 2) presupposition of its non-factuality, and 3) certainty with regard to its non-factuality.

3.1.5. A Possible Historical Source For *Be*1

Ross (1988) reconstructs a Proto-Oceanic form **ba* 'desiderative, future', which is obviously very similar both phonetically and semantically to the Mangap-Mbula *be*1. There is some evidence from Mangap-Mbula and surrounding languages which seems to indicate that **ba* / *be*1 might have been ultimately VERBAL rather than adverbial in nature. In Mangap-Mbula, there are several constructions where *be* and the verb 'say' *(-so)* appear to be functionally equivalent. These include: 1) purpose constructions (35), 2) counterfactual conditionals (36), 3) quotations (37), (38):

(35) *N-i* *i-la* *Lae* *be/* *i-so* *i-re* *lutu-unu* *bizin*
GIV-3S 3S-go Lae NF 3S-say 3S-see child-3S Plural
'He went to Lae to see his children.'

(36) *Be/So* *i-kam* *uraata* *so* *n-i* *le* *korong*
NF Say 3S-do work say GIV-3S RECX thing
'If he had done work, he would have possessions.'

(37) *To* *n-i* *i-so-* *be* *"La* *le-m."*
then GIV-3S 3S-say -NF 2S+go RECX-2S
'Then he said, "Go away."

To *n-i* *i-so* *p-io* *i-so* *"La* *le-m."*
then GIV-3S 3S-say REF-1S 3S-say 2S+go RECX-2S
'Then he said to me, "Go away."

(38) *Korong* *ti* *ti-paata* *be/ti-so* *"sutlam".*
thing DEM 3P-call NF/3P-say torch
'This thing, they call it a torch.'

This occasional distributional similarity between *-so* and *be* makes one wonder whether there might be some further connection between the two forms. In this regard, it is interesting to note that in the closely related Lokep language, which is spoken one island over from the island on which the Mangap-Mbula speakers live, the verb 'to say' is *-bet. -Bet* is always used in Lokep to introduce purpose constructions. Hooley (1971) lists the verb 'to say' in some other related languages as being:

Language	**Lexical Item**
Malasanga	*iweta*
Barim	*iwit*
Gedaged	*ibol*

To derive a grammatical form *be* from a proto-form consisting of a voiced bilabial-central vowel-voiceless alveolar via phonological reduction of the naturally weak final position would not be an unnatural linguistic change. The similarity in form and some functions of *be* and the verb 'to say' in Mbula and Lokep suggests the possibility that *be* might be historically derived from some sort of speech verb. The question of ultimate historical origin is complicated by the fact that the use of the verb 'to say' in encoding various modal concepts seems to be an areal feature of New Guinea[5], being found in both Austronesian and non-Austronesian languages. Deibler (1971) notes its use in the Eastern Highlands language Gahuku, while McElhanon (1973:37ff) describes the use of 'say' in various languages of the Huon Peninsula in encoding desire, intention, purpose, and inception.

In Mangap-Mbula, although the synchronic verb 'to say' is not itself formally similar to *be,* there are other phonetically similar forms which are broadly communicative in nature, including *mbol* 'story', *-pit* 'to recount or tell a story', and *mboe ~ mboyo*, 'song'.

This now concludes the discussion of *be.* The next adverb to be discussed is *ko.*

3.2 THE FUNCTIONS OF *KO*

The adverb *ko* 'asserted uncertainty with regard to the factuality of a proposition' also occurs immediately preceding the verb and is mutually exclusive with *be*$_1$. It may, however, unlike *be*$_1$, be extracted to the main clause initial Theme position. Cf. (39) and (40):

(39) *N-i* *ko* *i-peene* *ngge* *sa*
GIV-3S UC 3S-shoot pig NON-SPEC
'Perhaps he will shoot a pig.' or
'Perhaps he shot a pig.'

(40) *Ko* *n-i* *i-peene* *ngge* *sa*
UC GIV-3S 3S-shoot pig NON-SPEC
'Perhaps he shot a pig.'
'Perhaps he will shoot a pig.'

It will be noted that in (40) the glosses are in reverse order from those in (39). This is because a purely modal interpretation of tentativeness is more likely when *ko* occurs clause initially, while the temporal, future element seems to be more prominent when it occurs immediately before the verb.

The meaning of *ko* is more precisely stated as follows:

ko X
I say this because I want you to know something:
I think this:
There is a time when:
if one said X,
one would say something true.
I don't know this.

It will be noted that the proposed semantic formula has been phrased in such a way as to be independent of absolute time reference. This is due to the fact that, while *ko* is ordinarily used in clauses having future time reference, it may also occur in clauses bearing past time reference. These two possibilities are reflected in

the glosses given for examples (39) and (40). As an example of *ko's* occurrence in a clause with obligatory past time reference, cf. (41):

(41) *N-i ko i-kan kek*
GIV-3S UC 3S-eat PERF
'He has perhaps already eaten it.'
(Note: Inanimate, given objects are typically elided.)

After some four years of research in Mangap-Mbula, another form, related to *ko,* was encountered: *ko-la* (possibly from *ko* + *-la* 'go'). Syntactically, *kola* occurs in the same environments as *ko.* The form was first observed in (non-translated) religious texts dealing with the return of Christ to the earth. Upon further investigation, it was found that this form is used to encode events which the speaker considers to be MORE certain to happen sometime in the future than would be the case with *ko.* The reason it is so rare in ordinary conversation is that, according to native speakers, one normally is very unsure about what is going to happen in the future. I would schematize the meaning of *kola* as follows:

kola X
I say this because I want you to know something:
I think this:
There will be a time when:
if one said X,
one would say something true.

There are still two further modal forms which are related to *ko.* The first of these is the sentence initial form *kokena* (possibly from *ko* + *ke(mbe)(i)* 'like' + *na* 'given information for the hearer'), which is used as a negative desiderative/purpose with the meaning 'lest' (42):

(42) *N-io ang-ko. Kokena ti-pun yo ma ang-meete*
GIV-1S 1S-flee KOKENA 3P-hit 1S and 1S-die
'I fled lest they kill me / in order that they wouldn't kill me.'

Note in (41) that there is a distinct phonological sentence boundary preceding *kokena.* This is evidenced by falling intonation on *angko,* a following distinct pause, and higher pitch on *kokena* as befits the beginning of a new sentence. The meaning of *kokena* is:

X *kokena* Y
I say this because I want you to know something:
Someone thought:
"If X doesn't happen,
there will be a time when Y will happen.
If Y happens, it will be bad."
Because of this, there was a time when someone did X.

The final modal adverb formally related to *ko* is kozo (possibly from *ko* + the verb *-so* 'say', which reduplicates to *-zozo* and often reduces to *-zzo*). *Kozo* encodes determination or strong inner compulsion and, like *ko,* occurs either immediately preceding the verb or sentence initially. It is frequently used in threats, but is not obligatorily threatening. It may co-occur with *ko,* and when it does, always precedes it. Cf. examples (43) and (44):

(43) *N-io kozo ko ang-la lele tangga*
GIV-1S KOZO UC 1S-go place over:there
'I must go to that place over there.'
'I am determined to go to that place over there.'

(44) *Kozo n-u la*
KOZO GIV-2S 2S+go
'You must go.'
'I very strongly want you to go.'

A semantic formula for expressions containing *kozo* would be:

kozo X
I say this because I want you to know something:
I want X to happen.
If it doesn't happen, it will be bad.

3.3 THE FUNCTIONS OF *PEPE* AND *RIMOS*

There are two other modal particles which need to be mentioned: *pepe* 'prohibitive' and *rimos* 'cessative'. As the glosses indicate, both of these encode deontic modality, the first being associated with commands not to undertake some course of action, and the second being used to stop someone who is already involved in some activity. Both of these occur sentence finally. As illustrations, , cf. (45) and (46):

(45) *Kam* *ke* *ta-na* *pepe*
2S+do/get tree/stick SPEC-GIV PROHIB
'Don't take that stick.'

(46) *Pun* *tizi-m* *rimos*
2S+hit younger.sibling-2S CESS
'Quit hitting your younger brother.'

The meanings of these two forms can be represented as:

X *pepe*
I know this:
You haven't done X before now.
I don't want you to do X.

X *rimos*
I know this:
You are doing X now.
I don't want you to do it.

4. MODAL VERBS

In addition to the modal adverbs *be*1 and *ko* and their related forms, two verbs are particularly important in the language for encoding modal distinctions. These are the verbs *-rao* 'to be adequate, able, permitted, obligated' and *-so* 'to say, intend, desire, think'. Examples of some of their uses have already been adduced above. The abilitative sense of *-rao was* illustrated in example (14), the permissive sense in example (15), and the obligative sense in example (12). In its modal use, *-rao* is followed by a complement encoding the proposition to which the modality applies, which is typically introduced by *be*1. Following Wierzbicka (1987)[6], a covert conditional analysis of the meanings of the modal uses of *-rao* is proposed; i.e.:

1) X *-rao* Y (abilitative)

I do not say this:
I know there was a time before now when:
if one said: "X is doing Y,"
one would say something true.
I say this:
If X wants to do Y,
X will do it.

2) *-rao* Y (permissive)
I do not say this:
I know there was a time before now when:
if one said: Y,
one would say something true.
I say this:
If Y happens,
no one will say:
"I don't want Y to happen."

3) *-rao* Y(obligative)
I do not say this:
I know there was a time before now when:
if one said: Y,
one would say something true.
I do not say this:
If Y doesn't happen,
no one will say:
"I want Y to happen."
I say this:
If Y doesn't happen,
it will be bad.

Elsewhere, *-rao* functions as an intransitive predicate, having the meaning 'to be adequate, sufficient', and in verb serializations encoding temporal or locative extent. The intransitive use of *-rao* is illustrated in (47):

(47) *Kini* *ti* *i-rao* *som.*
food DEM 3S-RAO NEG
'This food is not adequate, sufficient.'
'There is not enough of this food.'

The verb *-so* has been illustrated above as encoding desire / intention (10), and as introducing indirect (15) and direct (16) quotations. Examples (17) and (18) showed it encoding conditionals. In all these uses it is followed by a complement, which is typically (but not necessarily) introduced by the adverb *be*$_1$. *-So* also functions as a simple transitive predicate. Cf. (48):

(48) *N-i* *i-so* *sua* *sa* *som*
GIV-3S 3S-say talk NON-SPEC NEG
'He didn't say any talk.' / 'He said nothing.'

The different uses of *-so* can be more precisely characterized as follows:

1) X *-so* Y (desire, intention)

I do not say this:
I know there was a time before now when:
if one said X did Y,
one would say something true.

I say this:
X wants to do Y

2) X *-so* Y (quotative, Y = complement)

I do not say this:
I know there was a time before now when:
if one said Y,
one would say something true.

I say this:
X says Y.

3) *-so* X, *inako* Y (hypothetical conditional)

I do not say this:
I know there was a time before now when:
if one said X or Y,
one would say something true.

I say this:
When I imagine a time when X happens,
I think Y will happen.

4) *-so / be* X, *so* Y (counterfactual conditional)

I do not say this:
I know there was a time before now when:
if one said X or Y,
one would say something true.

I say this:
When I imagine a time when X happens,
I think Y will happen.
When I imagine a time when X doesn't happen,
I think Y will not happen.

I know this:
There was no time before now when:
if one said X,
one would say something true.
Because of that, Y didn't happen.

Both *-rao* and *-so* have unique morpho-syntactic characteristics. Either one may be extracted to the sentence initial Theme position, as the following four examples illustrate:

(49a) *N-io* *ang-rao* *ang-la* *tomini*
GIV-1S 1S-RAO 1S-go also
'I can go also.'

(49b) *I-rao* *n-io* *ang-la* *tomini*
3S-RAO GIV-1S 1S-go also
'I can go also.'

(50a) *N-i* *i-so-((m)be)* *i-la* ...
GIV-3S 3S-say-(NF) 3S-go
'If/When he goes, ... '

(50b) *So-((m)be)* *n-i* *i-la* ...
Say-(NF) GIV-3S 3S-go
'If/When he goes, ... '

With regard to the above examples, note that when *-rao* is extracted to the Theme position it occurs in the third singular form, regardless of the identity of the Subject. Similarly, when *-so* is thematized, it occurs in the formally uninflected second singular form, again regardless of the identity of the Subject. Extraction of *-so* occurs only in conditional clauses, while *-rao* appears to be more freely extractable. No other verbs exhibit such neutralization of their Subject affixation except for a small set of motion verbs which are used in clause final locative serializations. And there are no other verbs which exhibit this potential for extraction to the Theme position. Recall now that the modal adverbs *ko, kola, kozo,* and *kokena* all occur sentence initially in main clauses, and that *be, ko* and *kola* all occur following the Subject and immediately before the verb. Thus, *-so* and *-rao* have a distribution parallel to that of modal forms which are clearly adverbial

in nature. One possible interpretation of these facts is that these two verbs are currently involved in a syntactic category change, in which they are losing their verbal status and gradually becoming reanalyzed as modal adverbs, to which they bear a semantic resemblance. This would be exactly like the historical derivation I have proposed for *be*. The current unique syntactic characteristics of *-so* and *-rao*, as compared with other verbs, probably already warrant their being treated, at least, as verbal auxiliaries.

5. NULL MARKING

When discussing modality, it is also important to be aware of the significance of the LACK of any formal modal marking within a clause. In Mangap-Mbula, modally unmarked clauses may encode statements, commands, or questions. With regard to the latter, WH-questions are pronounced under a falling intonational contour and are formally identical to statements except for the presence of a WH-word in the normal syntactic slot for the item questioned (51):

(51) *N-u* *re* *asing?*
GIV-2S 2S+see who(S)
'Who did you see.'

Other types of questions are pronounced with distinctive intonational contours, and often additional material at the end of the clause. Cf. (52) and (53):

(52) *N-i* *ko* *i-rao?*
GIV-3S UC 3S-adequate
'Will he be able to do it? (severe doubt)'

(53) *N-i* *ko* *i-rao,* *som* *som?*
GIV-3S UC 3S-adequate NEG NEG
'Will he be able to do it? (unbiased yes-no question)'

With regard to commands, there is no formal difference-syntactically, morphologically, or phonologically- between positive commands[7] and factual statements about which the speaker is certain. Thus, examples like the following

two can be interpreted either as being commands that someone go, or as statements that they went.

(54) *N-i i-la*
GIV-3S 3S-go
'He went.' or 'Let him go.'

(55) *N-u la.*
GIV-2S 2S-go
'You went.' or '(You) go.'

Whether (54) and (55) have imperative or declarative interpretations, they are still pronounced with the same falling intonation contour. The presence or absence of the independent Subject pronoun is a function of givenness and contrastive emphasis, not modality.

As far as statements are concerned, it can be reiterated that modally unmarked sentences are used to encode certain assertions about factual states of affairs. Thus, they have the following semantic specification:

Ø X (modally unmarked sentences)
I say this because I want you to know something:
I know this:
There was a time before now when:
if one said X
one would say something true.

6. SUMMARY

In this paper I have described the encoding of modality in the Austronesian language Mangap-Mbula. Rather than relying upon the somewhat vague notion of "irrealis", I have proposed an analysis in terms of three independent parameters- presupposition versus assertion, epistemic certainty/commitment, and factuality- and have characterized these parameters using a more controlled semantic meta-language. The latter parameter is somewhat deictic in nature, encoding a proposition which has been true at a specific time prior to the time of utterance or some other deictic center. The adverb *be*$_1$ encodes non-asserted factuality, and the adverb, *ko* encodes asserted UNCERTAINTY as to the factuality of a proposition. Null marking in declarative sentences correlates with asserted certain factuality.

Asserted non-factuality is encoded via the two sentence final adverbs *som* 'negative' and *zen* 'negative perfect'. Deontic modality is encoded using the complement-taking verb *-rao* and the two sentence final adverbs *pepe* 'prohibitive' and *rimos* 'cessative'. Intention and desire is encoded most frequently via the complement-taking verb *-so* 'to say'. *So* and *be* also serve in the encoding of conditionals. Finally, a possible source for the adverb *be* has been suggested: some speech verb cognate with the verb 'to say' in neighboring languages.

LIST OF ABBREVIATIONS

1S	First Singular
2S	Second Singular
3S	Third Singular
1P:EXC	First Plural Exclusive
1P:INC	First Plural Inclusive
2P	Second Plural
3P	Third Plural
AN	Austronesian
CESS	Cessative
DEM	Demonstrative
GIV	Given information
IM:REL	Immediate Relevance
LOC	Locative
NEG	Negative
NEG:PERF	Negative Perfect
NF	Non-Asserted Factuality
NON-SPEC	Non-Specific
PERF	Perfect
PROHIB	Prohibitive
RECX	Recipient-Experiencer
REDUP	Reduplication
REF	Referent
S	Singular
SPEC	Specific
UC	Asserted Uncertainty Regarding Factuality

NOTES

1. Mangap-Mbula is an Austronesian language spoken by some 2200 people on Umboi Island in the Morobe Province of Papua New Guinea. This paper is part of an ongoing program of research conducted under the auspices of the Summer Institute of Linguistics since 1982. Grateful acknowledgement is made of the valuable assistance speakers of the language have given, as well as of their patience. I am indebted to Tom Dutton, Darrel Tryon, Malcom Ross, and Anna Wierzbicka for a number of helpful suggestions on earlier drafts of this paper. This is a revised version of a paper which was presented at the 1988 meetings of the Australian Linguistic Society.
2. Note that, according to this definition, factuality is quite deictic in nature. A factual proposition is one with which the speaker POINTS to a particular event which has happened, is happening, or will have happened in the real world; whereas with non-factual propositions, the speaker doesn't point to particular events. The distinction can, therefore, be viewed as being analogous to the specific-generic distinction in noun phrases. Given such a definition, the extension of irrealis in Manam to encode habitual events is a straightforward consequence, since references to habitual events are not directed to any specific instances of the events.
3. It is also possible to extract *bela* to sentence initial position. In this respect, it resembles the conjunctive uses mentioned above. Uses #1 and #3-#10 here categorically exclude this possibility.
4. Elsewhere, the form *ta(u)* functions as: 1) the numeral 'one', 2) the indefinite but specific article, and 3) an introducer of relative clauses. In addition, *ta* is a component of a number of demonstratives and causal conjunctive forms. It is glossed as SPEC(ific) because its function appears to be that of pointing to a specific participant or proposition.
5. Actually, one wonders whether there is some sort of universal semantic affiliation between the verb 'to say' and non-factual modal concepts. Note that in colloquial English also it is possible to use *say* as a conditional marker. Cf. (Let's) Say I have an accident, how much would my insurance rates then go up?

6. In a personal communication, Wierzbicka says she is beginning to doubt this conditional analysis of the meaning of *can-like* forms. Because of their semantic variability, she suspects it is probably necessary to treat CAN as an unanalyzable semantic primitive. For Mangap-Mbula, however, given that *-rao* and the form *-so,* which unambiguously encodes conditionals, both exhibit similar, unique, syntactic characteristics, I think such an analysis still bears consideration, since similarity in syntax/form is often an icon of similarity in meaning.
7. Recall that negative commands receive distinct formal marking: the sentence final particles *pepe* 'prohibitive' and *rimo* 'cessative'.

BIBLIOGRAPHY

Capell, A. (1971). The Austronesian languages of Australian New Guinea. In Thomas A. Sebeok (ed.). **Current Trends in Linguistics**, Vol.8: Oceania. The Hague: Mouton, pp. 240-340.

Deiblér, Ellis. (1971). Uses of the verb "to say" in Gahuku. **Kivung** 4.2.101-110.

Dempwolff, O. (1939). **Grammatik der Jabem Sprache auf Neuguinea.** Hamburg: Friederichsen de Gruyter.

Givon, T. (1984). **Syntax. A Functional-Typological Introduction.** Vol. 1. Amsterdam: John Benjamins Publishing Company.

Hooley, Bruce A. (1971). Austronesian languages of the Morobe District, Papua New Guinea. **Oceanic Linguistics** 10.2.

Johnston, R.L. (1980). Nakanai of New Britain: The grammar of an Oceanic language. **Pacific Linguistics** B-70.

Lichtenberk, Frantisek. (1983). A grammar of Manam. **Oceanic Linguistics Special Publication No. 18.** Hawaii: University of Hawaii Press.

McElhanon, K.A. (1973). Towards a Typology of the FinisterreHuon Languages, New Guinea. **Pacific Linguistics** B-22.

Mosel, Ulrike. (1984). Tolai Syntax and Its Historical Development. **Pacific Linguistics** D-92.

Palmer, F.R. (1986). Mood and Modality. **Cambridge Textbooks in Linguistics.** Cambridge: Cambridge University Press.

Ross, M.D. (1988). Proto Oceanic and The Austronesian Languages of Western Melanesia. **Pacific Linguistics** C-98.

Wierzbicka, Anna. (1980). **Lingua Mentalis.** New York-Sydney: Academic Press.

Wierzbicka, Anna. (1987). The Semantics of Modality. **Folia Linguistica** 21.1.25-43.