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Three Faces of Niuean *aki*

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1. Introduction

This paper examines the properties of the Niuean instrumental element *aki*. This particle can be used as a preposition or it can appear as a clitic within the verbal complex. The cliticization of *aki* has interesting consequences for transitivity which will be explored in this paper. Another goal of this paper is to determine whether the clitic *aki* functions as an incorporated preposition (in conjunction with the verb as a case and theta-role assigner) or as some sort of bound element, coindexed with an element in a preceding clause. This question arises since in other Polynesian languages, such as Tongan and Samoan, *aki* has been said to have an anaphoric use (Chapin, 1974; Clark, 1976, Hovdhaugen, 1985). Little has been said specifically about Niuean *aki*, though Chapin (1974) states that *aki* is not anaphoric in languages other than Tongan and Samoan, and Seiter (1980) considers Niuean *aki* in all cases to be an incorporated preposition. Our conclusion in this paper will be that while in the most commonly cited examples *aki* has prepositional properties, when operator bound, it acts as a variable, and is thus, in a sense, anaphoric in that it needs an antecedent in the discourse. We show that in its variable use, Niuean *aki*, like *aki* in the languages discussed by Clark, Chapin, and Hovdhaugen, is similar to another verbal clitic, the locative or temporal *ai* which has been discussed by Chapin (1974) and by Massam and Roberge (1997).

2. Aki as a preposition

*aki* appears as a preposition with an instrumental meaning, as seen in the following examples. Note that Niuean has VSO word order and an ergative/absolutive pattern of case marking.1 The NP preceding the preposition *aki*

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1 Niuean is a Polynesian language, spoken primarily on the island of Niue and in New Zealand. I would like to express my gratitude to Harry Maaamana for his valuable work as language consultant. I would also like to thank Liz Pearce, Wolfgang Sperlich, Yves Roberge, and Lagi Sipeli for their help with this work; as well as audiences at the University of Toronto syntax group meetings, the University of Auckland, and Victoria University of Wellington for useful comments. This work has been funded in part by a Social Sciences and Humanities Research Council of Canada grant (410-94-1093). Any errors are my own.

2 The analysis of the Niuean case system developed in Seiter (1980) and Chung (1978) and adopted here, is as follows.

<table>
<thead>
<tr>
<th>Case</th>
<th>Proper/Pronoun</th>
<th>Common</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td><em>a</em></td>
<td><em>he</em></td>
</tr>
<tr>
<td>Erg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

appears preceded by the Absolute nominal marker. I assume therefore, that aki assigns absolute case to its complement, or, in terms of Minimalist theory (Chomsky, 1995), that the object of the preposition moves covertly to the specifier position of the prepositional phrase, to check the absolute case feature on the prepositional head. 1

1. a. Fano ke fahihapi e tau mohuku aki e pelu
   Go SBj clear ABS PL fem AKI ABS knife
   "Go and clear the ferns with the bush knife" (Sp)

b. Ne kai e Sione e tau talo aki e huki
   PST eat ABS Sione ABS PL taro AKI ABS fork
   "Sione ate the taros with a fork."

c. Ne tohitihi a Sione aki e pen
   PST writing ABS Sione AKI ABS pen
   "Sione is writing with a pen."

I will not further address the prepositional use of aki in this paper.

3. Aki as a cliticized preposition

3.1 The basics

An alternative realization for aki is shown below. In these examples, aki appears after the verb and the instrument usually moves to a position between the subject and the object, though this reversal of order is not obligatory, as seen in (3), as well as in (10b) below.

2. a. Ne folo aki e ia e akau e kuli
   PST beat AKI ERG she ABS stick ABS dog
   "She beat the dog with a stick." (Sp)

b. Kua hele aki tuai e ia e titipi e falsa
   PERF cut AKI PERF ERG he ABS knife ABS bread
   "He’s cut the bread with the knife”

3 a. Ne haka aki e Sione e akau e kuli
   PST hit AKI ERG Sione ABS stick ABS dog
   "John hit the dog with a stick." (L)

b. Ne haka aki e Sione e kuli e akau.
   PST hit AKI ERG Sione ABS dog ABS stick
   "John hit the dog with a stick." (L)

Seiter (1980) presents evidence that the instrument in constructions such as (2a) has direct object properties, as does the patient. For example, it can raise to subject or object. 2

4. Ne toka oti e au e tai ke fakapekapeke aki
   PST let all ERG I ABS water SBJ fill AKI
   HE tau fanau e tau lupo
   ERG PL children ABS PL bottles.
   "I let all the water be used by the children to fill the bottles." (L)

In sentences like (2), aki appears in the verbal complex, which is schematized below. Its order with respect to oti can vary but it always appears after the directional and intensifier elements and before the aspectual adverbs. I do not discuss here the correct derivation of the elements in the verbal complex, ignoring such questions as whether these elements head projections or are attached pre-syntactically to the verb. In this paper I assume that at least aki is base generated on the verb. 3

5. Verbal elements:
   Tns/Comp Neg Modal V DIR INT aki oti ai ASP-ADV EMPH PERF Q

Modals: fa "desiderative" fa "habitual" mata "look like" liga "likely"
   kamata “begin” tefei “nearly”

1 Niuene raising involves overt displacement of either a subject or object into the higher clause. This phenomenon is discussed at length in Seiter (1980) (see also Chung, 1978) and is analysed within GB/Minimalism by Massam (1985) and Massam (1993).

2 The freedom of order between aki and oti is shown in the following example. The interaction of a i and aki will be discussed in section 5. When they co-occur, aki precedes a i.

(i) Ne heholoholo aki oti oti aki e Sione e vala val a ia
   PST wash AKI all/AKI ERG Sione Abs water Abs he
   "John washed all of himself with the water.” (L)

3 The reason for this assumption is partly because of problems of morpheme ordering within the verbal complex which arise if aki heads a functional projection. The claim that aki is a base generated on the verb is perhaps supported by the fact that aki can appear inside the nominalizing suffix as seen above.

(i) Kua funekaka e hio-aki-a
gana he akau e tok
   Perf shameful Abs cut-aki-Nom his Gen tree Abs axe
   "His chopping the tree with the axe was shameful.” (L)
3.2. Aki and transitivity

Seiter (1980), citing examples such as (6) argues that it is not possible for aki to cliticize to an intransitive verb.5

6. *Ke e tohitohi aki a au (mogenei) e pene foou
PRES write AKI ABS I now ABS pen new
("I am writing now with a new pen.")

However, this is not entirely correct.7 First, while (6) is indeed ungrammatical, the same sentence with different case marking is acceptable as shown in (7). A similar pair is shown in (8).

7. Ne tohitohi aki e/*a Sione e pene
PST write AKI ERG/*ABS Sione ABS pen
"John wrote with a pen."

8. Ne hopo aki e/*a ia e kave toua
PST jump AKI ERG/*ABS she ABS cord rope
"She jumped with a rope."

Note that without aki incorporation, tohitohi and hopo each take an absorutive agent, and are thus intransitive verbs, as seen for tohitohi in (9). It is not possible to transitize this process verb by adding a created object. For the accomplishment meaning of "write", the simple form tohi is used.8

5 I retain here the gloss of Seiter (1980) who considers ke to denote present tense in structures such as (6) (cf. also Krupa, 1982). In Massaen and Smallwood (1990) and Massaen (1996) it is argued that ke is not a tense marker.
6 I have no way of ascertaining whether Seiter was led by the ungrammaticality of (6) to making a claim that can be proven incorrect by sentences such as (7), or whether there is in fact a substantial difference of grammar between his sources and mine. For all the sentences that Seiter considers ungrammatical due to the attachment of aki onto an intransitive verb, it is possible to account for them in other ways.
7 In fact, the following sentence was judged as grammatical, with an absorptive object. But note the translation given suggests that e pene "a book" is a locative and not a theme.
8 In fact, the following sentence was judged as grammatical, with an absorptive object. But note the translation given suggests that e pene "a book" is a locative and not a theme.

9. a. Ne tohitohi a Sione (aki e pene)
PST write ABS Sione (AKI ABS pen)
("Sione was writing with a pen")

b. *Ne/kua tohitohi e Sione e tau tala
PST/PERF writing ERG Sione ABS PL book
("Sione was writing books.")

c. Kua tohi e Sione e tau tala
PERF write ERG Sione ABS PL book
"Sione wrote books."

The generalization which might be drawn from the examples in (7) and (8) is that aki must at least create, if not initially attach to, a transitive verb. But this generalization would also be false, as (10) demonstrates.

10. a. Ne fakakofu aki e vaka e tau laukau
PST cause-cover AKI ABS canoe ABS PL leaves
"The canoe is covered with leaves."

b. Fakamana aki e poko e hita
cause-warm AKI ABS room ABS heater
"The room is warm with the heater."

Each of (6) and (10) contains a verb with an aki clitic, and two absolutive arguments, but (6) is ungrammatical while (10a) and (10b) are acceptable. The difference between them is that (6) contains an intransitive agentive verb, and (10a) and (10b) contain intransitive verbs without agents (but see below).

In (10) we find aki cliticized in constructions without an ergative subject, in syntactically intransitive clauses. It is thus not the case that aki can appear on a verb just in case it is syntactically transitive, ie contains an ergative agent. But it remains true that the verb aki attaches to must be semantically agentive. This is seen from the ungrammaticality of (11), where aki is attached to a semantically non-agentive verb. The static verb mafana, without the causative prefix faka-, is not possible with aki cliticization.9 This makes intuitive sense, since instruments and agents are closely connected thematic roles (cf. Brunson, 1992).

11. *Mafana aki e poko e hita.
Warm AKI ABS room ABS heater
("The room is warm with the heater.")

We can thus state the following descriptive generalizations regarding Niuean aki.

9 Of course cliticized aki without faka- is possible, and interpretations are not ungrammatical. But the examples (7) and (8) suggest that the aki clitic is in fact directly attached to the transitive verb, indicating that the formal syntactic position of aki has the status of "feral morpheme" in the sense of Selkirk (1982) and others. Such formal syntactic "feral morphemes" are often realized by other means in other languages, e.g. by suffixation of the verb.

10 Ne (faka)kofu aki e vaka e tau laukau
PST (Cause)cover AKI ABS canoe ABS PL leaf
"The canoe is covered with leaves." (Sp)
12. a. aki-agent/patient verb becomes a double object verb (with or without the ergative agent syntactically expressed).
b. aki-agent-only verb becomes a transitive verb.
c. aki cannot appear with a non-agentive verb.

We return below to a more theoretical account of these facts.

The generalizations in (12) can be accounted for by positing the following lexical entry for aki.

13. aki \parasitic predicate, [preposition/affix], [allow abs case]
< x, y >
user instr
assoc w/pred < x, (2) >
agent (patient)

MEANING: "agent uses instrument to VERB (patient)"

This entry states that aki is a preposition or an affix, and that it assigns two theta roles, that of user and instrument. The user theta role maps onto the agent theta role which is assigned by another predicate with which aki must be associated. Aki also allows for absolute case to be assigned to the instrument.

This entry accounts straightforwardly for the ditransitive sentences in (2). A number of questions arise, however. First, we must account for the cases where the agent remains unexpressed, that is, for the intransitivity of (10), and second we must account for the transitivity of (7,8).

With respect to the first question, to derive the examples in (10), we assume general rules which determine under what conditions a lexically present agent (or agent+user) theta role may remain syntactically unassigned. Transitivity alternations (and their relation to passivization) is a rich area in Polynesian syntax (see for example Biggs, 1974; Chung, 1979; Levin and Massam, 1986; Sperlich, 1994) which we will not explore in any depth in this paper. It is generally possible for some verbs to freely alternate between a transitive and an intransitive use, but there are other verbs which may not undergo these alternations.

14. a. Futi e Stone e ika
Catch ERG Stone ABS fish
"Stone caught a fish."

b. Ne futi e ika
PST catch ABS fish
"The fish was caught."

15. a. Ne ia he tagata e fade
PST build ERG man ABS house
"The man built a house."

b. *Ne ia e fade
PST build ABS house
("The house was built."

When a normally transitive verb does not express its agent, it surfaces as an intransitive verb, that is a verb with an absolutive subject, and no direct object.10 When an aki-criticized verb does not express its agent, it also appears as an intransitive verb, in the sense that it has an absolutive subject, rather than an ergative one, in spite of the fact that it has two direct arguments.

A more troublesome problem, because it does not fall in with a more general phenomenon, is the case of verbs such as iokiti "writing" and hopen "jump" with aki criticitation. Since the agent appears in the absolutive case in the noun aki sentences (as in (9a)), why must it be ergative when aki is criticized to the verb? We know that it is possible for a Niuean verb to appear with two absolutive case marked NPs and no ergative NP, as in (10), so why can the agent not remain as an absolutive argument along with the instrument in (7)? The answer to this question is not clear but we see from these facts that the notions of agentivity and transitivity are crucially interconnected in Niuean.

The data in (7) to (11) provide us with an unexpected glimpse into the nature of Niuean transitivity and unaccusativity, an otherwise elusive phenomenon due to the ergative/absolutive case system. We saw from these sentences that ergative case is conditional on transitivity and on agentivity, and that both of these must hold in order for a sentence to contain an ergative argument. An agentive argument of a mono-valent verb appears in absolutive case (9a), but as soon as this verb becomes transitive, the same argument appears as an ergative NP (7). In the case of (10), on the other hand, we see a transitive verb, that is, a verb which has two direct arguments, but neither of the arguments appears as an ergative argument, since neither is an agent. A similar situation is seen in raising to subject (see Seiler, 1980; Massam, 1985, 1995), where no NP may ever raise into an ergative position. These facts support a view of ergative case as an inherent transitive case thematically tied to agentivity. An agent may receive absolutive case, and a verb may have two direct arguments and fail to appear with an ergative argument. But if a verb has two arguments, one of which is an agent, then it is transitive, and the agent must be ergative.

3.3 Syntactic analysis

Having laid out the basic facts, I can now present an analysis of aki incorporation. This analysis is embedded in assumptions about Niuean clause structure and case, which are in turn based on Chomsky (1995). I assume the following clause structure for transitive and intransitive sentences. In the case of the transitive clause, the object merges with the verb, forming a VP. The light verb, or transitivity head (cf Hale and Keyser, 1993, Murase, 1992), merges to the VP, and the verb then moves up to adjoin to the light verb. The object then moves to the specifier position of the v-V head, where it checks absolutive case. Finally, the agent NP is merged, receiving inherent ergative case along with the agent theta role. The verb will then further front to INFL, above vmass, to derive

10Following Seiler (1980), I assume that the single absolutive argument of an intransitive verb is the subject of its clause. However, it is in fact difficult to determine subcjecthood in Niuean (cf. Biggs, 1974, Massam and Smallwood, 1996).
the VSO order. Note that I am ignoring the issue of what features force the various movements, simply assuming that somehow the movements are forced.  

16. **TRANSITIVE**

```
     I
    /\  vmax
   /  \                     
  sbj(erg)         *sbj*(abs)
     /\          \         \  
    obj(abs)  \    V  \    \  
         v  VP  V  targ
        (as-erg0) (as-abs) (as-abs)
```

17. **INTRANSITIVE**

```
     I
    /\  VP
   /  \                     
  V  V  
     \  \  \  
    obj  V  targ
        (as-abs)
```

This allows the following analysis of *aki* incorporation for the transitive cases, as illustrated in (17). *Aki* is base generated on the verb, thus allowing (but not forcing, cf. (7,9)) its case feature to be checked more than once. The object merges with the verb, then the instrument NP merges to the V. The light verb, or transitivity phrase, merges to the VP, and the verb moves up to adjoin to the light verb. The object and the instrument then move to specifier positions, where they check absolutive case. Finally, the agent NP is merged, receiving inherent ergative case along with the agent theta role. The verb will then further front to INFL, above vmax, to derive the VStInstrO order.

Assuming that we can predict when a light verb will be projected and when it will not be (as discussed above), the derivations of (7) and (8) and (10) are explained in this analysis.

4. *Aki* as operator bound variable

Interestingly, in A-bar bound contexts, the facts change. In (18) we see an example where the instrument has been extracted from the clause by relativization.

```
18. Ne fakatu a e au e kave toua ne fae hope PST buy ERG I ABS cord rope NFUT PROG jump
aki a ia
AKI Abs she
"I bought the rope that she is jumping with."
```

What is notable about this clause is that the embedded relative clause is intransitive, that is, the agent is in the absolutive case, even though *aki* appears on the verb. If there is no relative extraction, the clause will be transitive, as seen in (19).

```
19. Ne hope aki *e/ea ia e kave toua PST jump AKI *ABS/ERG she ABS cord rope
"She jumped with a rope."
```

Normally relativization does not cause a shift in transitivity, since the extraction leaves behind a variable empty category which receives case. This is true in Nisian, as seen in (20), which shows that in non-*aki* sentences, relative extraction of the object does not prohibit the subject from appearing with ergative case.

```
20. e kofe ne lute e au ABS coffee NFUT make ERG I
"the coffee that I made"
```

I conclude from these facts that in relative clauses with *aki*, there is no variable in the sentence cointerposed with the operator, since if there was, the subject would appear with ergative case, as in (20). Instead, *aki* appears to itself act as the variable in these clauses in that it is the only element in the sentence which is associated with the relative operator. When *aki* is bound by an operator in this way, it no longer acts as a theta role and case assigner, in fact it cannot do so, as seen in example (25) below, where the ungrammaticality of the ergative subject indicates that the verb+aksi complex is not free to assign absolutive case to an instrument empty category. *Aki* thus takes on a very different character in operator bound contexts.

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See Massam and Smallwood (1996) for a discussion of this question with respect to V movement in Nisian.
5. Aki compared with Ai

At this point it is interesting to turn to an examination of aki’s sister clitic "ai", seen in (21-24). This clitic, examined across Polynesian languages by Chapin (1974) has been recently treated by Massam and Roberge (1997). In the latter work, it is shown that in spite of the variety of contexts it occurs in, aki can be characterized across the board as an operator-bound clitic. Massam and Roberge classify four environments for Niuean aki as below:12

21. -relative clauses and other A-bar bound situations (clefs, wh questions)

| Ti aia e hata nasa faa hifo ai ai | then block ABS path NPT go down ABS she
| "and blocked the passage by which she usually went down." (M) |

22. -discourse anaphor

| Ne aia e au e taga Tuku ai nakai e koe | PST give ERG I ABS bag put Ai Q ERG you e uga? |
| ABS crab |
| "I gave you a bag! Did you put the coconut crab in it?" (S) |

23. -existentials

| Hahaa i ai fokai taha e moa-fitine fitipiu |
| PRED LOC Ai also one ABS bird-female multi-coloured |
| "There was also a multi-coloured hen there." (M) |

24. -causality, resultative, purposive ("dependant action" (Bauer, 1997))

a. Hi nakai heia ai agent.
then not consent therefore still (Gloss of Seiter, 1980)
"...so she still didn’t consent"

b. Ko e poka-aga he tama e maka ati
PREP ABS push-NOM POSS child ABS rock then
matakuai ka e kuali fear Ai ABS dog
“It was the child’s pushing the rock that frightened the dog.”
(L)

c. Kua kai e ia e kakaiona ti fitigo ai
PERF eat ERG he ABS gourd then wither I
“It (a worm) ate the gourd and it withered.” (M)

d. Ko e vaka milaki lahi ke heke ai a
PREP ABS boat good very SBJ ride Ai ABS
taua he tahia
we at sea
“It is indeed a good boat for us to ride in on the sea.”(C)

Massam and Roberge refer to analyses of other languages by Huang (1984), Freeze (1992), and Tellier (1991) to show that the four environments in (21) to (24) involve operator binding of ai. Further, they argue, following Pulleyblank (1986) and Guerassel (1995), that a non-paradigmatic clitic such as ai which has no phi features (ie features for person, number or gender), must be operator bound, since as an adjunct it cannot be recovered through the theta grid, nor can it in turn provide overt phi feature information for an phonologically null pronoun.

In this, Niuean aki contrasts with Romanceitics.

If ai is an operator bound clitic, and if, as mentioned above, in Samoan and Tongan, ai and aki have similar properties, then it might follow that aki is also an operator bound clitic in these languages. From the examination of Niuean data, I conclude that this the case in Niuean. What is strange in Niuean is that the similarity between ai and aki only arises in operator bound contexts. Aki is thus a lexical item that changes its character, depending on its syntactic content. When A-bar free, it acts as a preposition, assigning case and theta role, either in its own capacity or in conjunction with a predicate. When A-bar bound, it loses its case and theta role assigning properties, and comes to act like a variable clitic.13

The following sentence demonstrates support for the claim that, when operator bound, aki takes on a role like that developed in Massam and Roberge (1997) for ai.

25. Ne mai e ia ki a a u e tau kai poto, |
PST give ERG he to PERG me ABS PL foot duck |
ti uku hifo aki a*e au ke toka |
then dive down AKI ABS "ERG I to bottom |
“Hhe gave me the flippers then I dove to the bottom (with them).”

In this sentence we see aki in a different operator-binding context. (25) contains an instance of aki which falls into discourse anaphor class, as seen with ai in (22) above. Here too, the subject of the lower clause must appear in absolutive case, in spite of the fact that in cases where the instrument is overt, the subject must appear in ergative case. Hence, it is not just in relative clauses, but in other operator bound situations also, that aki exhibits variable-like properties.

A final observation is that the semantics of ai and aki become blurred in some dependent action operator contexts. This is seen in (25a), where it might be understood either that the cleared space is being used instrumentally to enable people to build the house, or that the act of clearing is being undertaken in order

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12Chapin (1974) discusses seven uses of ai in Niuean. Massam and Roberge (1997) collapse these into four main groups.

13It seems to be the case that prepositions are prone to such contextual variations in character. In English, for example, some prepositions can be used intransitively with an adverbial sense (eg: “He just walked by,” “She just went on and on for hours.”). And in French, so-called “orphan prepositions” act adverbially as in the following, from Roberge, 1996: A: “C’est un beau sec.” /"This is a nice bag;" B: “Merci, je voyage toujours avec.” /“Thank you, I always travel with.“ Particular constraints vary from language to language.
to enable people to build the house. As Chapin (1974) discusses, it is hard to determine what truth conditions might distinguish the two meanings instrument purposive and event purposive. Interestingly, it is possible to state this sentence (26a) either with ai or aki, with no real difference in meaning (cf. 26b). The same facts hold of the sentences in (27), where ai appears, in comparison with (18) which contains aki. These two sentences are said to have the same meaning.

26. a. Ne foa e lantolu e vula vao ke ta PST clear ERG they ABS bushland SBJ build
    aki e foiqe pola
    AKI ABS house thatch
    "They cleared the bushland to build a thatch house (with)" (Sp)

b. Ne foa e lantolu e vula vao ke ta PST clear ERG they ABS bushland SBJ build
    ai e foiqe pola
    AI ABS house thatch
    "They cleared the bushland to build a thatch house"

27. Ne fakatase e au e kava koua ne fao hopo ai PST buy ABS1 ABS rope NFUT PROG jump AI
    a ia
    ABS she
    "I bought the rope that she is jumping with."

Observe further that this blurring of meaning is echoed in the English sentences below, where an instrument purposive and an event purposive have essentially the same meaning.

28. a. I bought this pen to write a letter with. (= aki sentence)
    b. I bought this pen to write a letter. (= ai sentence)

In (28a), we normally would posit an operator which binds an empty category object of with, whereas in (28b), there is no apparent gap, but just a relation of reason or purpose between one event and another. This relation too can be formalized via an operator, as in the gapped instrument purposives, but in this case the operator is coindexed with the event of the first clause and it temporally or causally binds the event of the second clause in the dependant action relation observed by Bauer (1997) for Maori. It is in the Niuean corelates of the English clauses in (28) that the merging of ai and aki occurs.

6. Conclusion

We have seen in this paper that Niuean aki has interesting properties in that it undergoes a change in character depending on its context. As well as appearing as a relatively straightforward preposition, it can criticize onto a verb to act as a derivational affix, changing the argument structure and case properties of the verb. In this second use, it obeys a constraint in that it is unable to appear with a semantically non-agentive verb. It affects transitivity of the verb if the verb is originally an intransitive agentive verb, otherwise it simply allows for more than one internal argument. When operator bound, aki shows its third face, appearing as a variable, and losing its prepositional properties. In this use, aki is similar in properties to the Niuean locative/temporal ditit ai. Ai and aki are thus more closely related to each other than has been previously believed to be the case in Niuean. In this respect they are similar to Samoan and Tongan ai and aki.

REFERENCES


DP Licensing and Spec roles in Maori

Elizabeth Pearce

Abstract

In this paper I propose an account of local licensing conditions which privilege the relations between a Head and its Specifier and between a Head and the elements of the Head-chain. The analysis is based on conditions applying to PRO and to be-indefinites in Maori. The paper gives further indications of how the account that it provides can be extended to the conditions affecting the licensing of empty Ds, such as discussed in Longobardi (1994).

0 Introduction

This paper presents an analysis of syntactic conditions which distinguish between two kinds of subjects in Maori: Agentive DPs and unaccusative Theme DPs. The analysis is based on two constructions in which the licensing effects are distinct for DPs in the Spec and the complement position of the VP.

The particular licensing schema which emerges from the analysis privileges the head-government relations shown in (1a) and (1b), disallowing the relation shown in (2).

(1) a. $[\chi \Gamma \text{Spec} [\chi X \Gamma \text{[..]]}]$
   b. $[\chi \Gamma \text{..} [\chi X \Gamma \text{ YP }]]$

(2) $[\chi \Gamma \text{..} [\chi X \Gamma \text{VP Spec ..]]}$

(1a) shows a head-Spec relation; (1b) is a head-complement relation; and (2) is a relation between a head and the Spec of its complement. Although in (2) the head $X$ c-commands the Spec of its complement, the claim will be that it does not govern this Spec position. I will be arguing that the only way by which a head can license material in the Spec of its complement is via Spec-to-Spec transmission as shown in (3).

(3) $[\chi \Gamma \text{Spec} [\chi X \Gamma \text{VP Spec ..]]}$

*My thanks to Pauline Teripowai Higgins and to Timoti Kazeta for sentence acceptability judgments for Maori and to Mario Baltarelli for Italian. Thanks also to the audience at the presentation of this paper at the AJLA III meeting UCLA 1999, and to Jeffrey Waite.

(3) is thus in contrast with (2) in which the direct relation between the X head and the lower Spec is excluded.1

The two constructions which will provide the evidence for the licensing and anti-licensing relations shown in (1) - (3) are first, those involving PROs in non-finite clauses and second, those involving the licensing of a class of indefinite DPs. The discussion of the PRO constructions draws on material in Pearce and Waite (1997) and the analysis of the indefinite DPs extends on proposals in Pearce (1995).

1 Maori clause structure

On the evidence of the position of subjects with respect to classes of adverbial elements, I will be assuming that the subject in a tensed clause remains in the [Spec,VP] position in the surface:

(4) kia tae rawa atu ia ti ki Aoteora [Biggs 69]
   T/A arrive Intens thither he P Aoteora
   . . . that he get right to NZ

In (4) the verb tae raises out of the VP to I and the post-adverb position of the subject ia provides the indication that the subject remains in the [Spec,VP] position.

Another piece of evidence that suggests that the VSO agent subject remains in [Spec,VP] is that, when the subject does raise, it raises to a position preceding the Tense/Aspect marker of its clause:

(5a) Kitahi anō te wahine ka whakahoki mai i ngā pukapuka.
     then again Det woman T/A return here DO Det book
     'Then the woman returned the books'

b. *Kitahi anō (i) ngā pukapuka ka whakahoki mai te wahine.

In (5a), the subject te wahine immediately follows the sentence initial adverbial but it precedes the T/A marker of its clause. The pre-T/A position shown in (5a) can be filled only by the subject and not, for example, by the object (5b). These facts suggest that, if the Maori clause has a Spec position which is designated for the subject above the VP, then that position precedes rather than follows the T/A clause head position. Thus, the subject ia in (4) is inside the VP, rather than in a subject position above the VP.

The second assumption is that the Direct Object of the verb in a transitive clause is the immediate sister of the verb. This syntactic relation is suggested in particular by the availability of Object-Noun-Incorporation (ONI) as shown in (6b):

(6a) E tāhū i ana ia i ngā reta.
     T/A write T/A 3PSg DO Det letter
     'She is writing the letters'

1 Rousou (1996) argues for a similar view of the syntactic relations identified in (1) - (3). In her account, she proposes that these syntactic relations are compatible with Minimalist assumptions (Chomsky 1995) with respect to asymmetric operations.

A syntactic view of ONI as in (6b) would involve the raising of the N head in the structure:

(7)  

The complex V so formed then raises to Infl.

A number of possible approaches can be taken as to the arrangement of other argument positions within the VP.2 The discussion in this paper will however focus on the two types of nominative arguments, Agents and unaccusative Themes, which from the above, I take to be respectively in [Spec,VP] and in the complement position as sister to the V head. Any additional VP-internal arguments (whether or not there is more than one VP shell) must therefore be located above the lowest V head but below the [Spec,VP] position assigned to the Agent. This means that the bracketing indications given for a clause with a ditransitive verb in (8a) and for an unaccusative verb in (8b) are open to further interpretation on which I will not commit myself here:

(8a) I hoatu [vp ia [v tē te pukapuka] ki a Mere].
     T/A give 3PSg Det book P Pers Mere
     'She gave the book to Mere'

b. I mahuei [vp ... [v tē kōtiro] i te pahi].
     T/A left Det girl P Det bus
     'The girl missed the bus'

In (8a) the nominative subject ia is in [Spec,VP]; but in (8b) the nominative subject te kōtiro is the Theme complement of the unaccusative verb. In both (5a) and (5b) the proposition-governed argument will be located somewhere in the structure above the lowest V node.


2 Subjects in tensed versus non-tensed clauses

In some respects clausal complements in Maori which have an irreals interpretation show a familiar subjunctive versus non-finite alternation such as is found in Italian in examples (9a,b):

b. E tūhū i reta anā ia [Bauer (1978)]
   T/A write letter T/A 3PSg
   'She is letter writing'
(9a). Maria vuole [aiutare la famiglia].
   Maria wants help family.
   'Maria wants to help the family'

b. Maria vuole [che la famiglia ti aiuti].
   Maria wants that the family you help 3Sg Subjunct
   'Maria wants that the family help you'

When the subject of the embedded clause is coreferential to the main subject as in (9a), the verb of the embedded clause must be an infinitive. When the two subjects are non-coreferential as in (9b), the embedded clause has an inflected subjunctive verb. Corresponding to the Italian examples in (9) are the forms for Maori shown in (10):

(10a). Kia te pirangi a Mere [ki te*ki te awhina i tōna whānau].
   T/A want Pers Mere help DO Poss family
   'She wants to help her family'

b. Kia te pirangi a Mere [ki te*ki te awhina tōna whānau i]
   T/A want Pers Mere help POSS family DO a koe).
   Pers 2PSg
   'She wants that her family help you'

The examples in (10) appear to parallel those for Italian in (9) in that the form of the T/A marker preceding the verb depends on whether or not the two subjects are coreferential. In Maori when the subject of the embedded clause is non-coreferential to the main clause subject the verb of the embedded irrealis clause is preceded by ki. When the two subjects are coreferential and the embedded subject is non-coreferential, the verb is preceded by ki te.

Leaving aside the question of possible syntactic tests to distinguish ki and ki te from simple Tense/Aspect markers,3 I will treat both of these forms as Infl elements, ki thus being like a subjunctive marker, and ki te corresponding to non-finite inflection.

It has long been noticed that, although Maori shows comparability with languages like Italian for (10a,b), as with other Polynesian languages (Samoan: Chung (1978); Tahitian, Tokelauan, Tikopian: Hooper (1982)), it also has an unexpected restriction on the kinds of predicate that can occur after ki te as in (10b). In essence the restriction is that unaccusative verbs may not occur in an embedded clause after ki te.4 Some examples are given in (11):

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3The form ki also occurs as an optative as in:
   (i) Kia tau e kai [Biggs 85]
   kia three Det/Fish
   'Let there be three fish'

4These constructions are examined in greater detail in Pearce and Waite (in preparation). See also Chung (1978), Reddy (1990), Hooper (1982) and Bauer (1993: §1.1.2.2).

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The structures in (14) reflect the assumption that the agentive subject is in [Spec,VP], whilst the Theme object of the verb is the V-sister. In unaccusative constructions I take it therefore that the unaccusative subject is housed in the position of the PRO in (14b).

I now rule out (14b) by invoking the contrast shown in (1a,b) versus (2). In (14b) the PRO is sister to V is governed by the V or the V-trace. In (14a), on the other hand, the PRO is in [Spec,VP], where although it is c-commanded by F, it is not governed by F or by F-V.5

This analysis of non-finite PROs now requires that we examine the reverse situation. That is, I ask the question: how are the overt subject DPs licensed in the tensed clause? The corresponding structures with overt DPs are as shown in (15):

5Sandy Chung has pointed out that the prohibition against PRO in (14b) should give rise to comparable effects in VPs occurring inside DPs. The following examples from Waite (1994) show that the subject in such DPs may be overt or non-overt:

(i)a. te pata a Hōnī i te poaka [W (22a)]
   Det kill Gen Hōnī DET pig
   "Hōnī's killing the pig"

b. te pata i te poaka [W (15a)]
   "killing the pig"

(ii)a. te kītā o te tanāti e te kākā [W (23b)]
   Det see-Pass Gen Det child by Det teacher
   "the child is being found by the teacher"

b. te kītā i te kākā [W (23b)]
   "being found by the teacher"

(iii)a. te malau i te mēnā [W (15b)]
   Det left Gen Det car by Det driver
   "the car's being left by the driver"

b. te malau i te kōrātia [W (15b)]
   "being left by the driver"

In the examples in (i) - (iii) the non-subjects have the Case-marking characteristic of VP-internal arguments. In (ii) the object te poaka is marked by 1, the DO Case marking in (ii) the Agent has the usual passive a Case marking; in (iii) the cause argument te kītā is marked by 1 as in the corresponding tensed form, as in (16b). The overt VP subjects have the genitive marking which, following the arguments in Waite (1994), applies according to whether the argument is the [Spec,VP] subject (ii), or the Theme (i) and (iii). The availability of Case marking for the overt subjects suggests that the non-overt variants should have pro rather than PRO subjects.

Although in the surface forms, the DPs remain inside the VP, both DPs must have access to the F head for nominative Case checking. Suppose that a strong [+nom] F projects a Specifier position, whereas a weak [+nom] F fails to project a Specifier. The DPs in (15) can now enter into a covert relation with Spec,FP, for Case checking. The lexical/non-lexical contrast for the [Spec,VP] subject reduces to the presence versus the absence of the Spec,FP. This proposal is in accordance with the suggestion put forward in Chomsky (1995) that the strength of D features in a functional head may be the determining factor in whether or not a Spec is projected. A projected Specifier has a checking function which must be implemented, overtly or covertly.

This analysis also has some plausibility in view of both syntactic and morphological characteristics which can be highly salient in a comparison, say with Italian. That is, Italian has strong D or other F features which lead to the projection of the relevant Specifier even when the F is [+nom]. The relevant contrasts are identified in (16):

(16)
(i) Spec,IP subject Italian Yes, SVO Maori No, VSO
(ii) Subject-Verb agreement Yes weak

→ (iii)
   a. D-features strong
   b. [+nom] + Spec - Spec

The relative weakness of D-features in Maori is suggested by the failure of overt raising of the subject in the simple tensed clause (16(i)) as well as by the absence of overt subject-verb agreement (16(ii)). However, whereas the Minimalist approach aims to derive the contrasting surface configurations from the checking properties, my analysis of the failure of the PRO to occur in (14b) seems, as it stands, to require the use of a mechanism of government, such as indicated by the conditions (1) - (3).

As an alternative, however, we can consider that the relation between a verb and its sister DP is to be regarded as another kind of checking relation. That is, all of the legitimate relations in (1) and (3) count as licensing structures in terms of Minimalist checking. The mechanism of government is thus reinterpreted as a checking relation which can be satisfied in the head-Spec structure of (1a) or in the head-complement relation of (1b). The structure in (3) is a covert variant of (1a) in that the Spec of VP has access to the Spec of XP position.

3 The licensing of indefinite he-NPs

The second case involving a contrast in the licensing relations affecting [Spec,VP] and the verb-complement position is found in the conditions affecting the licensing
of indefinite he-NPs. Once again, following Chung, Mason & Milroy (1995), the contrast is between unaccusative and non-unaccusative constructions. The analysis to be presented in this section extends on that put forward in Pearce (1995).

An indefinite he-NP can occur only as the nominative DP of the clause. As shown schematically in (17), in simple clauses these infinitives cannot be the nominative DP in [Spec,VP]: (17a), but they can be the nominative DP of an unaccusative (17b):

(17a)  *T/A Verb [vp he-NP t1 . . .]
   b. T/A Verb [vp t1 he-NP . . .]

Thus the examples given in (18), corresponding to (17a), are ungrammatical and those given in (19) instantiate the grammatical schema of (17b):

(18a)  *Kei te pata he tamariki i te kan. [Bauer (1963), (72)]
   T/A beat he children DO Det cow
   'Some children are beating the cow'
   b. I whiu he wahine i tina mōkai ki te moana
   T/A throw he woman DO her pet P Det sea
   'A woman threw her youngest child into the ocean'  [CMM (19b)]

(19a)  Passive
   Kua mahia e Pani he kapu ti mā rītou. [Bauer (1084)]
   T/A make-Pass by Pani he cup tea P them
   'Pani has made them a cup of tea'
   b. Neuter/Sitative
   I mahoe he korī i te pahi.
   T/A left he girl P Det bus
   'A girl missed the bus'
   c. Experience
   I pirangi he tīne ki tīnei wahine.
   T/A desire he male P this woman
   'A man desired this woman'

If we take the indefinite he as a kind of polarity item, we can say that it needs to be licensed by an existential head or operator. If the existential projection is housed within the functional structure of the clause, it enters into a direct licensing relation with the sister of the verb through the chain created by the movement of the verb, such as shown in (20):

(20)

In (20) the lowest V head of the chain directly head-governs the D head of its DP complement.

There is an overt analogue of the head linking relationship shown in (20). Following Waite (1994), the predicational constructions illustrated in (21) involve the raising of a head to a he which here serves as the T/A nexus of the clause.

(21a)  He [nā mīihia]; [vp ia ti].
   T/A teacher he
   'He is a teacher'
   b. He [a, nōmihia]; [vp tēnei ti].
   T/A red this
   'This is red'
   [Waite (1994)]

The nominative DP of (20) is in contrast to the accusative DP in (22) in which the chain relation between the V and the D head is blocked by the overt Case morphology:

(22)

Thus, the licensing of the unaccusative he subject takes place in a head-government structure, in which the he is the D head of the complement of the verb. Such is not the case for the he-NP subjects in [Spec,VP] in (18). In parallel with the explanation for the inaccessibility to government of the PRO in [Spec,VP], I assume that there is no licit chain relation for the [Spec,VP] indefinite he-NP subject: the chain relation shown in (20) does not work for the [Spec,VP] position (17a) because the non-overt existential F fails to project a Specifier in which to house an operator that could enter into a binding relation with the DP in the [Spec,VP] position.

There is, however, another kind of construction in which an indefinite he-NP originating from [Spec,VP] is licensed. These are constructions which include a higher operator, such as a quantifying expression or a negative, as in (24); corresponding to (23.11) in the terms of Chung, Mason & Milroy (1995):
(23) Description of he-indefinites following Chung, Mason & Milroy (1995).6
I: The existential he-indefinite can only be the nominative argument of a passive or unaccusative verb. 
II: The polarity he-indefinite is an operator-bound nominative argument.

(24) Operator licensing of he:
   a. Kāore he tamaki i kai i ngā tumā rā. 
      Neg he child T/A eat DET cel there 
      'A child did not eat those cells'
   b. Ta tau i tau, i tito waia hou he wahine. 
      that year that year T/A compose song new he woman 
      'Every year a woman composed a new song'
   c. Ki te kāringa he reo, kai puta iho koe. 
      T/A call he voice don't come out down you 
      'If a voice calls, don't you come down'  
      [CMM (31a)]

Chung, Mason and Milroy propose to unify their two-way characteristic as in (25):

(25) The variable introduced by a he-indefinite must be unselectively bound or
quantifiably closed by a sentence level operator. [CMM, fn.19 (c)]

What I have been trying to do here is to identify the precise syntactic conditions for these indefinites. The account that I have given of the licensing requirement for the (23.1) type involves the absence of a Specifier for the existential F (as well as the absence of a head-to-head relation with the D (= he)). With the constructions

6An additional factor is the distinction in the behaviour of stage versus individual-level predicates, as shown in (i) and (ii).
Stage versus Individual level predicates
(i) STAGE
   a. I kōrero he kōrero i te makaranga o te tara. 
      T/A red he face P Det drop-Nmlz of Det trouser 
      'Shoelace blushed because she lost her trousers' [CMM (36)]
   b. I kōrero he kōrero i te ko ringa i ngā paraikete. 
      T/A cold he girl P Det-Gen you-Pi take-Nmlz DO Det-Pi blanket 
      'A girl got cold because you took away the blankets' [CMM (36)]
(ii) INDIVIDUAL
   a. Tā te kōrero he kōrero i te waka. 
      T/A red he car 
      'A car was red' [CMM (39)]
   b. *Tā te kōrero he kōrero i he kōrero. 
      T/A cold he stone 
      'A stone was cold' [CMM (39)]

The contrast between (i) and (ii) requires further investigation. Whilst the examples in (i) have the form of the neuter/stative type of unaccusative, with an i-marked Cause argument, our first assumption would be that the forms in (ii) are also unaccusatives. It would, for example, seem reasonable to suppose that the syntactic and thematic relations between a colour and the referent which has the colour is the same in all cases. On the other hand, Levin and Rappaport (1994) argue that a characteristic common to unaccusative verbs is that they encode either internal or external causation. As they point out, de-adjectival unaccusative verbs are formed from stage-level rather than from individual level adjectives. This suggests that, in line with the opposing stage/individual interpretations for the adjectives in (i) and (ii), those in (i) count as unaccusative adjectives, but those in (ii) do not have an unaccusative structure. The argument structure of these adjectives is a topic for future research. Also requiring further investigation is the possible role of Event structures within or external to the VP, such as proposed in Kratzer (1989) and in much recent work.

represented in (23.1), such as those in (24), we might suppose that these constructions contain operators which have the capacity to link up with the Existential head, empowering it to project a Specifier position. The he-indefinite in these cases has access to the projected Spec and thus to a relation with the existential head. The availability of such a Specifier position is supported by the typical position of the subject in these constructions, as in (24a).7

A partial representation of the suggested schema is as follows:

(26) \[ Diagram \]

The idea is that, whereas in the case of the (23.1) construction the FEx projection is 'made visible' through the head-chain relation with the he of the unaccusative below it, the (23.1) type higher operator constructions have the capacity to identify the FEx projection from above. In both cases the FEx projection must be identified by some overt material in an appropriate licensing configuration.

Returning again to the unaccusative constructions, recall that these do not need an independent mechanism to trigger the projection of the Spec,ExistNP. This is because the he of the indefinite enters into a head-to-head relation with the Verb-Infinit-Exist chain. The relationship in this instance is covert because the he Determiner head does not raise out of the DP, nor can the whole DP raise to a Spec position of an ungovernmented XP.

4 Some further implications

The kinds of binding mechanisms just described find parallels with phenomena that have been analysed for other languages. Thus, Longobardi (1994) invokes a licensing role for chains involving head-to-head relations with respect to properties of determiners in Italian. Consider in particular the examples in (27) and (28):

(27) a. *Acqua viene gita dalle colline. [L. (14a)]
   b. Viene gita acqua dalle colline. [L. (14b)]

   water comes down from the hills
   comes down water from the hills

7Note that only some of the triggers for subject proposing have the capacity to license he-indefinites:
(i) Kahi anā to tekaha wahine ko whahao mai i ngā pokopokesanā
   then again Det woman T/A return DET book
   then this woman returned the books
   Kahi anā he books' 
   Kahi anā is an adverbal licenser for subject proposing. The licensing operator for he-indefinites
   must be an operator with quantificational force.

(28) a. *[Det dog ha Nineteenth] went to school
   b. [Det dog ha Nineteenth] went to school

   The Nineteenth dog went to school
   The Nineteenth dog went to school
c. Ho preso acqua dalla sorgente. [L (16c)]
I took water from the spring

(28a)
*Consideravo studenti intelligenti.* Bellucci (69a) L fn11.f
I considered the students intelligent

(28b)
Consideravo gli studenti intelligenti. Bellucci (71a)
I considered the students intelligent

In both (27b) and (27c) acqua is the direct complement of the verb, the accusative subject in (27b) and direct object in (27c). The null determiner is licensed here in the same syntactic configuration as applies to the licensing of an unaccusative indefinite he in Maori. In (27a) the null determiner is not lexically governed. In (28) studenti occupies a small clause Specifier and is accessible for accusative Case checking, as shown by (28b), but the null determiner in (28a) cannot be licensed in a head-to-head relation. For Longobardi, there is a requirement for lexical head government of the empty category D, but, as he notes, for cases like (28a) "the required relationship with a head seems stronger than many usual definitions, since it does not allow an empty D to be licensed by a verb across small clause boundaries" (fn. 11). Whereas constructions like (27a) can be ruled out on the basis of a failure of lexical head-government under c-command, (28a) is like the ungrammatical constructions in Maori in which the indefinite DP is located in [Spec,VP]. In both (28a) and the schema (17a), the relevant Spec position is in a c-command relation with a potential lexical governor. The 'stronger' relation which Longobardi points to has been spelled out in the proposals which I have been developing here.

Longobardi's analysis focuses on the relationship between the D and the N of the NP that it heads. When the D is empty, its interpretation can be satisfied, either through the raising of N to D (generic interpretation) or through an anywhere rule which assigns an existential interpretation to the empty D (Longobardi 1994 (102)). In the latter case lexical government is required for the empty D. In the analysis that I have presented in this paper the conditions and the interpretation for he-indefinites match up with those applying to the Italian existential empty D. In Longobardi's analysis of Italian the lexical government requirement is forced because the D is empty. The Maori he occurring in the same syntactic position is lexical. The head-government requirement (or the chain) from V to D (= he) is suggested by the failure of he-NPs to occur in the presence of overt accusative Case-marking (cf. (21)). We may assume however that the LF representation of such quantified expressions requires at least a coindexation (if not also raising) to an extra-VP position. In the portrayal of the conditions affecting the existential he in Maori I have supposed that the representation must include a linking mechanism to that extra-VP position. One particular piece of evidence in support of this proposal rests on the presence of overt he in the T/A position in examples like those in (21a,b).

In the interest of a universal characterization of mechanisms affecting both the Maori he and the Italian existential empty D, I thus wish to propose that the two phenomena are most appropriately unified in terms of the present analysis of the Maori construction. It seems to me that this interpretation has the further advantage that it provides a better representation of the quantifical characteristics of the semantics of the constructions involved, including both those with overt and with non-overt quantifiers. A similar focus on the unification of operator-bound and bare indefinite DPs is proposed also in Déprez (1996), based on material from yet more languages.

In summary, I have argued that the syntactic conditions applying to PRO DPs and to he-indefinites in Maori can be accounted for in terms of relations which allow for government between a head and its Spec (1a) and between a head and its complement (1b), but which do not allow for an unmediated governor relation between a head and the Spec of its complement (2). These conclusions have been drawn from the consideration of VSO structures in Maori in which we have been able to view the properties of DPs located in [Spec,VP] as distinct from in other positions within the VP or external to the VP. In the preceding paragraphs I have suggested that the mechanisms applying to Maori are generalizable to other (VSO) languages in which similar effects are manifested in different, but comparable, construction types.

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**Genitive Case in the Maori DP**

Elizabeth Pearce

Abstract

This paper presents a reinterpretation of the syntax of possessives in Maori, building on the proposals of Waite (1994) as to the treatment of the thematic roles within the DP. The analysis proposes that the various manifestations of Case marking on arguments within the DP derive from the particular characteristics of two functional projections occurring within the DP. Case can alternatively check an Agent argument or a Theme argument, the latter being coindexed with the lexical head of the phrase. A N marking can be interpreted as a hybrid nominalizer/passive and it has the capacity to Case check a passive Agent or, alternatively, it acts in the manner of an N Case checker for either an active Agent or a Theme. Constituent ordering alternations are located in an Identification projection (IdentDP) situated below D and which, in Maori, has characteristics that, in other languages, may be located rather in the immediate projection of D.

The Maori DP, as with the DP in other Polynesian languages presents some unusual characteristics from the point of view of language typologies. For example, in the Maori DP an overt determiner is required (although one such determiner may be absent in the presence of certain case-marking prepositions); there is a double system of genitive Case marking which distinguishes the role of the possessor with respect to the possessee, and the Maori DP does not accept the stacking of adjectives. These facts, and others, are well known in the literature on Maori, but, up to the present time, Waite (1994), an account of the syntax of possessive DPs in Maori, is, to my knowledge, the only work that has appeared addressing the analysis of nominal expressions in a Polynesian language from the perspective of DP structure.

It is clear that there are a number of questions to be solved in analyzing the syntax of the Maori DP (and of the DP in other Polynesian languages). In my

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2 Essentially, following the work of Alvey (1987), Stowell (1989) and many others, the notion that a nominal expression is headed by D and that other functional projections may occur within the DP embedding the NP.
approach in this paper my analysis focuses on the syntax of possessives within the DP. I begin in Section 1 by setting out the proposals of Waite (1994) that I will be adopting in the paper as to thematic role assignments within the DP. Section 2 identifies the need for incrementating the DP structure with the inclusion of at least one additional functional projection below D and establishes the mechanisms by which the two forms of genitive Case are assigned within the Maori DP. Section 3 extends on the data of the earlier sections, presenting additional patterns of Case realization within a DP containing a nominalized verb. Section 4 undertakes a detailed examination of the manifestations of passive forms within the DP. Section 5 returns to the analysis of the constituent ordering alternations. Finally, in Section 6 I turn to some comparative data and analyses which appear to provide support for the use of the projection that I label "identifi" situated below D in Maori.

1 The analysis of Waite (1994)

Waite (1994) proposes (i) that the complement of the D may be an NP, a VP, or an AP; and (ii) that the distribution of a/0- (henceforth: A/O) genitives derives from distinctions in the D-structure placement of possessor arguments within the DP. With respect to (ii), the contrasts in the forms shown in (1) match with the D-structure representations in (2).

1a. te tamaiti a te wahine
   the child GEN the woman
   'the woman's child'

1b. te whaea o te wahine
   the mother GEN the woman
   'the woman's mother'

2a. DP
    D D'
    te Spec N
    te wahine tamaiti

2b. DP
    D D'
    te Spec N
    te wahine whaea

The A-marked possessor is generated in [Spec,NP] in (2a), whereas the O-marked possessor is placed in the complement position of the N at D-structure in (2b). In the derivation of both (1a) and (1b) the N head raises to D. In Waite's analysis, genitive Case is assigned to the [Spec,NP] position. Therefore, from the (2b) structure the DP complement must raise to [Spec,NP] for Case assignment.

3Maori examples cited from published sources are regularized to the modern spelling system using macrons for long vowels. I thus follow the modern system in treating the A/O genitive markers as short vowels when they are not in compounds. See Biggs (1989: 5-6) for practical demonstration of the genitive markers. Some glosses are also altered from the original citations for reasons of consistency.

Waite's analysis of the argument positions within the DP as in (2) is supported by the existence of parallels in the forms of genitive marking in DPs which contain V heads:

3a. Ka patu te tama i te poaka.
   T/A kill the boy ACC the pig
   'The boy killed the pig'

b. te patu a te tama i te poaka
   the kill GEN the boy ACC the pig
   'the boy's killing the pig' [Waite 1994: (24a)]

c. te patu o te poaka
   the kill GEN the pig
   'the killing of the pig'

d. te patu o te poaka e te tama
   the kill-PASS GEN the pig by the boy
   'the killing of the pig by the boy' [Waite 1994: (24b)]

e. *te patu(a) o te tama o te poaka
   the kill(PASS) GEN the boy GEN the pig
   'the boy's killing of the pig' [Waite 1994: (24c)]

The example in (3a) shows the case marking characteristics in a tensed clause containing an active transitive verb: the subject te tama has zero nominative case and the direct object te poaka is preceded by the accusative marker I. The remaining examples (3b-3e) give forms of the corresponding nominal expression embedding a VP with the same predicate-argument structure. Thus the A-marked DP in (3c) is the Agent subject. In this example the object of the transitive verb patu is preceded by the accusative marker J. In (3c) and (3d) the O-marked DPs are the D-structure complements of the verb, active in (3c) and passive in (3d). When a verb has both a subject and a direct object, only one of its arguments may be marked by genitive Case, as illustrated by the contrast between (3b) and (3c).

The Theme argument of an unaccusative verb in a nominal expression is marked with the O-genitive, just like the D-structure Theme of the passive verb in (3d):

4a. Ka mahue te motukā i te kaitaraiva.
   T/A left behind the car P the driver
   The car was left by the driver'

b. te mahue o te motukā i te kaitaraiva
   the left behind GEN the car P the driver
   'the car's being left by the driver' [Waite 1994 (25c)]

In the sentence (4a) the unaccusative verb mahue has te motukā as its nominative (zero Case) Theme. In (4b), where mahue is the head of the VP constituent within the DP, motukā as the Theme is marked with the O-genitive.

4For other discussions, see Biggs (1990: 43-44), Bauer (1993: 215) Similar patterns occur with verbs bearing nominal morphology. These are discussed in Sections 3 and 4.
Thus, the distribution of the A/O genitive markings on arguments embedded inside VPs matches with the Agent/Theme distinction for the syntax of the VP arguments. These syntactic relations have been transposed by Waite (1994) in his identification of the argument roles within the NP as shown in (2a) and (2b).

A further aspect of the data that is treated in Waite (1994) concerns alternative ordering characteristics within the Maori DP. The examples (1a) and (1b) are repeated in (5a) and (6a) to show the contrast with the alternative orderings given in (5b) and (6b).

(3a). te tamaite a te wahine
the child GEN the woman
‘the woman’s child’

(4a). te whea o te wahine
the mother GEN the woman
‘the woman’s mother’

On the basis of the structures in (2a) and (2b), whereas in both (5a) and (6a) the N head raises to D, in (5b) and (6b) the alternative ordering of the N with respect to the genitive DP is obtained through the absence of such N-raising. In both (5a) and (5b) the genitive a te wahine remains in the [Spec,NP] position, the position to which genitive Case is assigned. From (6b), given the pre-N position of o te wahine and the absence of N-raising, we see that the surface ordering in this example requires the preposing of the Theme te wahine. In Waite’s account of these constructions the Theme DP raises to [Spec,NP], the position to which genitive Case is assigned by D.

In this present paper I retain Waite’s analysis of the D-structure position of the possessor arguments as well as the notion that the DP may embed different types of lexical phrases: NP, VP, AP. I will be proposing an alternative treatment of the syntax of genitive Case marking and I will be proposing that the basic DP structure put forward by Waite should be incremented by the inclusion of additional functional projections between the D head and the lexical projection (NP, VP, . . .).

2 The DP-Internal structure

In section 2.1 I identify some problems in the mechanisms of the treatment in Waite (1994) and in section 2.2 I begin to sketch out the main lines of the analysis that I will develop.

2.1 A reassessment of the treatment in Waite (1994)

According to Waite’s analysis, genitive Case is assigned by D to the Spec position immediately below it. As it has already been mentioned with respect to (2b), the complement D within an XP embedded under D must then raise to [Spec, XP] (in (2b), [Spec.XP] = [Spec,NP]) for genitive Case assignment. This Spec position is selected as the position for Case assignment in parallel with the analysis that

nominative Case is assigned by Infl to the [Spec,VP] position (the configurational relation between I and [Spec,VP] being parallel to that between D and [Spec,NP/VP]). Waite, in fact, proposes that the Case assigning parameter for Maori is that Case is assigned by a head to the right.

There are two important considerations which suggest that a reassessment of this treatment of Case assignment is called for:

(i) If [Spec,NP], like [Spec,VP] is an argument position, then movement of a Theme DP into an empty [Spec,NP] would be a violation of the theta-criterion.

(ii) If the A/O distinction in genitive Case realization is dependent on the base position of the argument, then Waite’s account fails to identify the mechanism by which structural Case assignment by D matches with the distinction in the overt Case realizations.

Both of these considerations taken together, suggest that there is a problem with the notion that both kinds of genitive Case are assigned to the [Spec,NP] position, or [Spec,VP], etc. as the case may be.

As well as attempting to solve these particular problems with the mechanisms adopted in Waite’s account, in the analysis that I will develop, the actual mechanisms themselves will be reinterpreted in accordance with the more recent perspective on conditions for Case licensing in the Minimalist treatment. In this regard, what will be particularly relevant for our account is the notion that Case is checked by a functional head in an overt or covert Spec-head relation.

In effect, much recent work on DP syntax in a variety of languages (Abney 1987, Bernstein 1991, Ritter 1991, Valois 1991, Giusti 1993, for example) provides arguments for a more elaborated structure than we have so far been considering for the Maori DP. There are thus a number of language particular arguments, as well as theory-internal reasons to suppose that DP structure allows for the inclusion of functional projections between D and NP which can be assumed to play a role in the Case checking conditions for the DP-internal genitives of Maori. The next section embarks on the analysis of what will be required in the DP-internal structure for Maori on the basis of these more recent proposals.

2.2 Functional projections within the DP

So far, we have seen that the use of the A- and O-genitive markings distinguishes Agents from Themes and that a VP embedded in a DP can retain the accusative marking for its complement. If only one argument is present, that argument may be Case-marked as an A- or O-genitive depending on its role, whether it is in an NP or a VP.

The assumed presence of only one genitive per DP means that in Waite’s analysis, only one head position, namely D, needed to be implicated in the mechanisms associated with genitive Case realization. Whilst I retain one aspect of this analysis (the notion that there is a single head which has the capacity to

Waite’s analysis focused on the array of Case markings occurring in DPs embedding VPs, for which this assessment appears to be correct.
alternatively license A- and O-genitives), an empirical reason which forces the extension of the array of genitive Case checking heads is that there can, in fact, be more than one genitive within a DP. The following are examples of DPs embedding an NP and including two genitive Cause markings for the arguments of the NP:

(7a) te karakia a ngā tohunga o te heke
the chant GEN the.PL tohunga GEN the migrate

b... me tana tikanga anā o aua rangi o aua rā:
tina
and his manner yet GEN those days GEN before DEM

'... with him behaving as on previous days.' [Clark 1981: (31); cited Williams 1957]

In (7a) the O-genitive, o te heke, must be interpreted as the complement of the N karakia, rather than as the complement of tohunga. Thus the N karakia is associated with two genitive marked arguments: the Agent, A + ngā tohunga, and the complement, O + te heke. With (7b), the translation given by Clark is quite free in representing tikanga as a verb, the gloss is accurate in showing tikanga as a noun. Tāna or tīna6 is a possessive pronoun and o aua rangi o aua rā is a complex O-genitive DP. Thus, whereas it appears that a VP embedded in DP can include only one genitive Case (from *3e*) an NP embedded inside a DP may be accompanied by both an A-genitive and an O-genitive.

The analysis that I will propose requires the availability of at least two Cause checking heads relatively placed between D and NP/VP as shown in (8).

(8)

In (8) Cause checks the O-genitive Theme and Cause checks the A-genitive Theme. Cause is generated above NP and Cause is generated above VP. When two arguments are present, Cause checks the A-genitive subject, or Agent. If both types of arguments raise overtly out of their NP/VP, the relevant Case checking positions will be as shown in (9) and (10).

(9) D [a DP: CaseGen [o DP] CaseN [np ti ... ti]]

(10) D [a DP: CaseGen [i DP] CaseN [vi ti ... ti]]

The relative ordering of the DPs in (9) and (10) matches up with the domains for chain formation as defined in Chomsky (1995). That is the raisings are un-nested.

On the further assumption that Case heads are optionally generated, one or both of the Case projections may be absent. The derivation however will of course crash there are not enough Case checking heads to match with the number of overt DPs in the structure. Consider now the case of a D embedding a VP containing an O-genitive such as example (3e) contrasting with *3e). Given the structure in (8), there are conceivably two ways in which the O-genitive Case could be checked. Either it is checked by CaseGen or by Cause. If we were to assume that Cause could check the O-genitive, then it should be possible to derive *3e) with CaseGen checking the A-genitive. The failure of *3e) suggests that Cause must be associated only with the 1 accusative Case, deriving examples like (3b). If Cause is therefore not involved in the checking of an O-genitive, the remaining functional head in (8) which could used in the checking of the O-genitive is CaseGen (for examples like (3c) and (3d)). For CaseGen our assumption would have to be that this head can check genitive Cause on a DP regardless of whether it is an Agent or a Theme argument within the VP.

Something of the sort seems to apply in English for the pre-N genitive DPs:

(11a) the enemy's destruction of the city
b. the city's destruction

In (11) the form of the pre-N genitive is the same whether that DP is the Agent, as in (11a), or the Theme, as in (11b). In this respect, genitive Case is here in parallel with nominative Case, the Case applying to whichever argument it is (Agent or Theme) that succeeds in raising to the [Spec,IP] position. With the Maori possessives, however, if CaseGen is available for checking either an Agent or a Theme, CauseGen must be also be able to distinguish between these two argument roles.

The means by which I propose to deal with the Case form distinction arising from the base position of arguments is through a mechanism of coindexing between the N/V head and its complement. I will represent the coindexing through superscripting as shown in (12).

6This citation from Williams (1957) does not show the vowel length distinction, resulting in an ambiguity for the form given as tāna 'his/her'. The singular possessive determiners occur in three forms, for 3SG: tāna (A-genitive), tīna (O-genitive) and tāna (neutral A/O-genitive). Following the discussion in Bauer (1996: 376-377), the neutral form is more commonly used in 1SG and 2SG in association with familiar items.
CaseGen will be sensitive to the presence or absence of coindexing, checking the Agentive in the absence of coindexing and the O-genitive when coindexing is present. CaseN/v must also be sensitive to coindexing so that it will correctly check only a DPX.

In summary, where the V of the VP is transitive, the available Case realizations are as shown in (13), in which the Case checking heads are matched vertically with the DPs that they check.

(13) CaseGen Casev

a. a DP
   i DPX
b. o DPX

In a further instantiation for the transitive verb within a DP, the Theme argument may occur with the i-accusative marking when no overt Agent is present:

(14)a. te pata i te poaka [Waite 1994: (13a)]
   the kill ACC the pig
   'the killing the pig'
b. horohoro te huti i nga puna [Clark 1981: (2): MF 98]
   pika the pull up ACC the-PL anchor
   'Then they quickly pulled up their anchors'

Since such accusative Case marking on the Theme is unavailable to the Theme of an intransitive verb, or of a passive verb, the DP-internal Case marking in these instances is in parallel with the Case mechanisms applying to the arguments of a VP in a tensed clause. Within the tensed IP, accusative Case is withheld when the Theme argument is the only argument available to be checked for nominative Case. The parallel withholding of accusative Case within the DP (see (4b)) suggests that, in terms of the structure given in (8), Casev is suppressed (or unrealized) if no argument is present to be checked by CaseGen. This means that in examples of the type shown in (14) we must assume that a non-overt Agent (= pro) is present in the structure.

To finally complete the picture of the array of Case realizations for VPs embedded within DPs, the Agent of a unergative verb, lacking the ‘x’ coindexing, must be realized as an A-genitive:

(15) Ka pataki te wina i te waiata a te waihine
    TiA broken the window P the sing GEN the woman
    'The woman’s singing broke the window’ [Waite 1994: (9a)]

In (15) waiata ‘sing’ is the unergative V head of a VP in which te waihine ‘the woman’ is the [Spec,VP] Agent.

The table in (16) summarizes the different forms of Case realization for Agents and Themes occurring in different classes of VPs embedded in DPs:

<table>
<thead>
<tr>
<th>CaseGen</th>
<th>Casev</th>
<th>Oblique</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Unergative</td>
<td>a DP</td>
<td>--</td>
</tr>
<tr>
<td>b. Transitive7</td>
<td>a DP ?</td>
<td>i DPX</td>
</tr>
<tr>
<td></td>
<td>pro</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o DPX</td>
<td></td>
</tr>
<tr>
<td>c. Unaccusative</td>
<td>o DPX</td>
<td></td>
</tr>
<tr>
<td>d. Passive</td>
<td>o DPX</td>
<td></td>
</tr>
</tbody>
</table>

In (16) a complement DP is always DPX and is realized as O + DP unless it is the complement of a transitive verb associated with an Agent argument (overt or pro).

For the arguments of NPs embedded within a DP, Carstairs (1970) shows that the accusative i-marking cannot apply in the presence of a lexical N head.

In (17) and (18) the Theme in the NP projections must be an O-genitive. Given the availability of both an A- and an O-genitive for a single NP as in (7a,b), we must assume that Casev checks the O-genitive, in contrast with CaseGen which checks an i-accusative.

Corresponding therefore to the table in (16) for DPs embedding VPs, the parallel representation for DPs embedding NPs is as shown in (19).

(19) CaseGen CaseN

<table>
<thead>
<tr>
<th>(a DP)</th>
<th>(o DPX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>o DPX</td>
<td></td>
</tr>
</tbody>
</table>

In (19) the structural relations within the NP, except for instances in which there is clearly an Agent and a Theme, are inferred (unambiguously) through the form of the Case marking on the particular DP.

7In effect, my treatment of the n DP possibility will suggest that the Agent may be lacking in these cases.
8Lee Smith (personal communication) finds that some nouns, including whakaua ‘hand’, can occur with an accusative marked complement. I assume that, in such instances, the case is Inherent Case since it appears to be lexically determined.
2.3 Ordering within the DP

The focus of the analysis up to now has been on the mechanisms by which the differing Case markings are realized. The discussion assumed that the Case checking is implemented in Spec-head relations between the DPs and the appropriate functional head (CaseGen or CaseAv). The Case checking is implemented either by overt or covert raising of the DP to the Spec of the functional projection. In order to round out this picture we will need to identify the available FP positions for both the N/V heads and the possessive DPs.

In Waite's (1994) analysis, constituent ordering differences, such as illustrated in (5) and (6), were obtained through optional implementation of N/V raising out of NP/VP. Whilst the analysis that I have been presenting here suggests that Case checking positions for possessive DPs are situated above the lexical NP/VP projection, we have not yet identified the level (PF or LP) at which such checking takes place.

The first point to be made is that Waite's interpretation that N/V can remain inside NP/VP at PF cannot be correct because certain modifying constituents can appear only to the right of the lexical N/V head. On the assumption that these constituents are generated above the NP/VP and therefore to the left of the N/V head, then it must be that the ordering N/V - Modifier is obtained through the raising of the N/V out of the NP/VP projection. The examples in (20) and (21) show N ordering with respect to an adjective (= (20)) and with respect to a quantifier (= (21)).

(20).
(a). te ika nuī ti
the fish big

(b). *te nuī ika
the fish big

(21).
(a). ngā whāinga katoa ti
the.pl women all

(b). *ngā katoa whāine

A further aspect of ordering within the DP which will be relevant to our analysis is that, whereas genitive marked DPs may precede a V head, the pre-V position is not available to an i-accusative marked DP:

(22).
(a). te putū o te wahine
the kill GEN the woman

(b). te putū i te wahine
the kill ACC the woman

The contrast between (23a) and (23b) indicates that the O-genitive can raise above the raised V head. Since [Spec,CaseGen]P is the checking position for the O-genitive our first assumption must be that the O-genitive in (23a) raises to at least this Spec position. For the ordering in (22a) we have the possibility either (i) that the O-genitive has the option of not raising to [Spec,CaseGen]P at PF, or (ii) that the V head has the option of raising higher than [Spec,CaseGen]P, attaching (a) to D or attaching (b) to a functional head positioned in a projection situated between D and CaseGenP.

Because ordering alternations such as observed in (22a) versus (23a) are matched by similar ordering alternations occurring with Ns and demonstratives, I am going to propose that the analysis (iiib) provides the most appropriate interpretation for the data. The alternative demonstrative-N orderings are illustrated in (24).

(24).
(a). te nei wahine
the-near woman

(b). te wahine nei
the woman near

If we suppose that N must raise to a fixed position within the DP, then the demonstrative - N ordering must be obtained by raising of the demonstrative to a higher Spec position. In the structure (6) the highest Spec position available for the demonstrative is [Spec,CaseGen]P. If, however, we were to include a further functional projection between D and CaseGenP, we obtain a 'neutral' (i.e. non-genitive Case) Spec position which could be optionally available either to the DP from [Spec,CaseGen]P or to a demonstrative.

In Section 6 I will introduce some comparative data in support of this proposal for an additional functional projection which I will be labelling "IdentP" (Identification Phrase). The more extended discussion is delayed until the later section however, because there are some further facts about genitive Case marking that we need to include in the analysis. Aspects of these data will also be relevant for the consideration of constituency and ordering within the Maori DP.

2.4 Summary

Whilst retaining the analysis of Waite (1994) for the positions of arguments within the NP/VP, I have proposed that Waite's original structure be incremented with the inclusion of two Case checking projections housed between D and NP/VP. CaseGen, the higher of the two Case projections, must be present for the checking of an A-genitive. When no A-genitive (no [Spec,NP/VP]) argument is present, CaseGen can alternatively check an O-genitive for a DP which is coindexed as the complement of the N/V. Otherwise, in the presence of a [Spec,NP/VP] argument, the Case of the
complement argument is checked by the lower Case projection, Casey matching with an O-genitive and Casey matching with an I-accusative DP.

Section 2.3 has given an initial presentation of the treatment that will be further developed in Section 5 to account for the ordering alternations for the N/V and DP constituents occurring immediately to the right of the main D head. This treatment proposes that a further functional projection, IdentP, provides the landing site for the raised N/V head as well as a Spec position which may optionally attract a genitive DP or a demonstrative.

Up till now, our discussion has focused on the system of Case marking applying to possessive arguments in DP structures containing head nouns and head verbs occurring in their base forms. An alternative to the structures in which the embedded head is a base form verb is the construction in which the verb bears nominalizing morphology. The DP constructions containing nominalized forms present additional variants in the Case marking patterns which we will proceed to examine in the Section 5.

3. Nominalized forms

The examples in (25) below show that DPs containing nominalized verbs instantiate Case marking patterns which are directly comparable to those observed in DPs containing the bare form of the verb.

(25a) te patu/nga a Rewi i te poaka [Waititi 1974: 136]
  the strike-NMZ GEN Rewi ACC the pig
  Rewi's killing the pig

b. tāku patu/nga i te poaka [Biggs 1969: 81]
  my strike-NMZ ACC the pig
  'my killing the pig'

c. te patu/nga o Paki e Rewi [Waititi 1974: 143]
  the strike-NMZ GEN Paki by Rewi
  'the killing of Paki by Rewi'

d. te mahue-tanga o Pani mā i te tereina
   the left-NMZ GEN Pani others P the train
   'Pani and the others being left by the train'
   [Waititi 1974: 143]

In (25a) Rewi is the A-genitive subject of the nominalized transitive verb patu. That the a marker preceding Rewi is the A-genitive marker and not to be confused with the personal marker a is seen in the fact that the corresponding form, tāku in (25b), is the A-form of the 1SG possessive determiner (contrasting with the O-form tāku). The object in both (25a) and (25b) takes the 1 accusative marker. In (25c), although no overt passive morphology is present, the Theme Paki is an O-genitive and the Agent Rewi is preceded by the passive agent marker e. In (25d) the nominalized mahue-tanga is formed from the unaccusative verb mahue. The Theme in this example has the O-genitive marking as o Pani mā. Thus, except for the absence of the passive morphology in (25c), the Case markings in the forms given in (25) correspond to those of the equivalent forms in (3) and (4) in which the nominalizing morphology is not present.

There are three further Case marking patterns which occur in DPs containing nominalized verbs but which we have not found in the corresponding constructions with bare verb heads. In one of the new patterns both the A- and O-genitive markings are present. In a second pattern the Agent is marked as an O-genitive, the form which is otherwise reserved for Themes. The third pattern combines an A Passive marked Agent with an I-accusative marked Theme. We examine first the double genitive pattern, illustrated in the examples in (26).

(26a) te patu/nga o te wahine [Carstairs 1970: (20)]
  the strike-NMZ GEN the woman
  'Hone's killing of the woman'

b. te patu/nga a Hone o te wahine [Carstairs 1970: (19)]
  the strike-NMZ GEN Hone GEN the woman
  'Hone's killing of the woman'

The availability of two genitive markings in a DP with a nominalized verb suggests that the nominalizing function provides an additional site in which genitive Case can be checked. The structure (27) includes an Nnzm projection instantiating this function below the CasegenP and shows the proposed Case checking positions for the two genitive DPs in (26a) and (26b). (The structure in (27) is simplified in that it does not include the D or Casey projections.)

(27) IdentP
    
    Spec CasegenP
      a Hone, Casegen'
        Spec Nnzmp
          o te wahinej Nnzm VP
            i

In (27) [Spec,CasegenP] is shown as the Case checking position for the Agent DP and [Spec,Nnzmp] as the corresponding position for the Theme DP. The lexical verb raises to Nnzm and then, as before, on to Ident, passing through Casegen. As shown in Carstairs (1970) the relative ordering of the two DPs cannot be reversed:

(28a) *te patu/nga o te wahine a Hone
  the strike-NMZ GEN the woman GEN Hone
  'Hone's killing of the woman'

b. *io te wahine patu/nga a Hone
  the GEN the woman strike-NMZ PERS Hone

The two genitive Case checking positions can be seen as structurally parallel to the subject and object checking positions above the VP in the clause and the raising mechanisms for the DPs are thus likely to be interpretable, once again, as falling
under the type of domain licensing conditions proposed in Chomsky (1995: Ch. 3). The relative ordering of CaseGenP and NmzP in (27) matches up with the fact that, when NmzP is not present and when both an Agent and a Theme DP are present, [Spec,CaseGenP] in the active construction must assign A-genitive to the Agent (the Theme complement of the V being marked as an j-accusative).

We now consider the two further patterns of Case marking occurring with nominalized forms, beginning with the type shown in (29), in which the Agent bears the O-genitive marking.

(29a) te tā-nga o Pou i te rīkau [Bauer 1993: (868)] the fell-NMZ GEN Pou ACC the tree 'Pou's felling the tree'
(b) te patau-nga o Hone i te poska rā, the kill-NMZ GEN Hone ACC the pig DEM 'John's killing of that pig ...'
[Reedy 1979: p.262 (65)]
(c) te kōbaru-tanga o Pou i a ia anō the kill-NMZ GEN Pou ACC PERS 3SG again 'Pou's killing of himself ...' [Bauer 1993: (752)]

Thus, alongside the use of the A-genitive for the Agent, in (29a), the forms in (29) show the use of the O-genitive applied to subjects of nominalized transitive verbs.

In the preceding analysis of the O-genitive marking we derived the O-genitive, as distinct from the A-genitive, through mechanisms by which the Theme DP was coindexed with the lexical head, whether an N head, or a V head. The application of the O-genitive marking to Agents appearing with nominalized verbs suggests that Nmz checks an O-genitive without regard to the presence or absence of the complement co-indexing. The fact that the j-accusative marked complement can co-occur with an O-genitive Agent, as in (29a-c), would be consistent with the placement of CaseP between NmzP and the VP.

Finally we come to the third type of Case marking pattern occurring in DPs with nominalized verb heads. In this pattern an g (Passive) Agent is accompanied by an j accusative marked Theme.12

(30a) te patau-nga i te wahine e Hone the strike-NMZ ACC the woman by Hone 'the woman's being killed by Hone' [Carstairs 1970: App (12)]
(b) i te kite-nga anō e Mahanga i ngā waawae o P the see-NMZ indeed by Mahanga ACC the-PL footprint GEN Hotomui ... [Chung 1973: fn.22 (b); cited from Johansen (1948)] Hotomui 'When Mahanga had seen Hotomui's footsteps ...'

In each of the examples in (30) the Agent is preceded by the g passive Agent marker, yet the Theme has the accusative case marker j.

Carstairs (1970) shows that this pattern of Case marking is not available when the verb has overt passive morphology.13

(31a) *te patau-nga i te wahine e Hone the kill-PASS-NMZ ACC the woman by Hone 'the woman's being killed by Hone' [Carstairs 1970: (83)]
(b) *te patau-nga e Hone i te wahine [Carstairs 1970: (84)]
(32a) te patau-nga o te wahine e Hone [Carstairs 1970: (83a)]
(b) te patau-nga e Hone o te wahine [Carstairs 1970: (84a)]

In both (31) and (32) the verb is a nominalized passive. We see from (32) that the O-genitive marking for the Theme is available; and from (31) that the j accusative marking is not available. This means that there is a sense in which the contrasting forms in (30) are passive in use of the g Agent marker, but active in use of the j accusative marker. The ungrammaticality of the forms in (31) suggests that the preempting of accusative marking must be due to the presence of the overt passive morphology.

4. The Passive interpretation

From the analysis of Hale (1968) through many other accounts to that of Blevins (1994), there has been extensive discussion of the treatment to be applied to the phonology/morphology of the Maori passive. Whilst it is not our purpose here to enter into the phonology/morphology side of the debate, it is however relevant for our discussion to consider the morphological form of the passive, in particular in its relation to the morphological form of the nominalized verb.

12Reedy (1979) gives paradigms embedding nominalized verbs under the purpose complementizer he: (j)a. Ka whaka-tere i tāna poho hei horomiti i a Maui T/A CAUSE-large DO her stomach COMP swallow DO PERS Maui. (She) enlarged her stomach to swallow Maui! [Reedy 1979: 292, (114d)]
(b) ? ...... hei horomiti-tanga i a Maui COMP swallow-NMZ DO PERS Maui
(c) * .... hei horomiti-tia-tanga i a Maui [Reedy 1979: 292, (114e)]

Whereas the accusative marked Theme is represented as marginal with the simple nominalized form, (b), it is clearly unacceptable where the passive morpheme is overtly present in (c).

13Reedy (1979) gives paradigms embedding nominalized verbs under the purpose complementizer he: (j)a. Ka whaka-tere i tāna poho hei horomiti i a Maui T/A CAUSE-large DO her stomach COMP swallow DO PERS Maui. (She) enlarged her stomach to swallow Maui! [Reedy 1979: 292, (114d)]
(b) ? ...... hei horomiti-tanga i a Maui COMP swallow-NMZ DO PERS Maui
(c) * .... hei horomiti-tia-tanga i a Maui [Reedy 1979: 292, (114e)]
As indicated, for example, in Biggs (1969), for many (in fact, most\textsuperscript{14}) verbs in Maori there is a correspondence in the shapes of the passive and nominalizing suffixes:

\begin{equation}
\begin{array}{ll}
\text{Pass} & \text{Nnz} \\
\text{mahi} & \text{-a} \\
\text{inu} & \text{-mia} \\
\text{tangi} & \text{-ha} \\
\text{roho} & \text{-ia} \\
\end{array}
\end{equation}

"work"

'drink'

'cry'

'sit'

\[\text{Biggs 1969: 80}\]

Correspondences of this type have led to the use of the forms -Cia, -Canga as abstractions to represent the two kinds of suffixes and in which 'C', for a given verb, is constant.

We have seen already in (32) that a nominalized verb may be formed on a passive base: patu-a-nanga 'kill-PASS-NMZ'. However, although such suffixal compounding is available, the seemingly hybrid nature of the active/passive manifestations of forms like those in (30), with g Agents and i-accusative Themes, suggests the possibility that simple nominalized forms may optionally be interpreted as containing portmanteau morphemes combining the passive and nominalizing suffixes.

For Reedy (1979) the use of the O-genitive marking with a transitive nominalized verb lacking passive morphology gives rise to thematic ambiguity:

\begin{equation}
\begin{array}{ll}
\text{Kia kuru-a au e Hone te pēha i te} \\
\text{TA throw-PASS DIR by Hone the stone \text{TA the}} \\
\text{whakatōi-tanga ōna e Pare} & \text{[Reedy 1979: 282 (97a)]} \\
\text{tease-NMZ his by Pare} & \text{'}Hone threw the stone when he was teased by Pare.'}
\end{array}
\end{equation}

\begin{equation}
\begin{array}{ll}
\text{...when he was being teased.'...when he was teasing.'} & \text{[Reedy 1979: 282 (97b)]}
\end{array}
\end{equation}

In (34a), because of the presence of the g Agent, ōna can only be interpreted as the Theme. With the absence of any overt Agent in (34b), ōna can be be interpreted as the Theme or as an O-genitive Agent.

With the inclusion of overt passive morphology on the verb, the O-genitive can be interpreted only as the Theme.\textsuperscript{15}

\textsuperscript{14}See Bauer (1993: 396-398) on variation in the forms of the passive as well as in the forms of the nominalizing suffix.

\textsuperscript{15}Reedy (1979: 301, fn 12) describes the ordering whakatōi-tanga as the unmarked ordering. As he notes, Chung (1973: 668) identifies the following intra-Polynesian patterns in the ordering of those two suffixes:

\begin{enumerate}
\item Tahtilian: Cia-Canga
\item Maori & Hawaiian: Cia-Canga
\end{enumerate}

Chung (1973: fn 6) also reports that the inclusion of the passive suffix in forms like (35a,c) is restricted to a contemporary usage and does not appear in older Maori texts.

\[\text{Reedy 1979: 282 (97d)}\]

Recall now that it is the hybrid nominalized forms which we have yet to account for with respect to the use of the g Agent and i-accusative Case markings. We have seen that the i-accusative marking cannot occur when distinct passive marking is present on the verb (whether or not the verb is nominalized). How then in these constructions can the Agent be Case-marked as the Passive g? Let us suppose that the Nnz head can receive a hybrid interpretation and that, in this interpretation, the Nnz head can have passive features. Then, in the presence of the passive features, the Nnz head has the capacity to check the g Case marking. With respect to the Case marking of the Theme DP, the inclusion of -Canga marking on the verb then has no other effects distinct from those which apply to the bare form of the lexical verb inside a DP.

5. Surface ordering alternations

'Given the analysis that I have proposed with respect to the sites for the checking of the different forms of Case markings in the full range of DP types, we are now in a position to examine the effects that obtain with regard to the relative orderings of the DP-internal arguments. But first, let us review the Case checking positions for the different forms of Case marking:

\begin{equation}
\begin{array}{ll}
\text{An A-genitive is Case checked in [Spec,Case}_{\text{gen}}P].} \\
\text{An O-genitive is Case checked:} \\
\text{\quad (i) in [Spec,Case}_{\text{gen}}P] in the absence of Nnz.} \\
\text{\quad (ii) in [Spec,Nnz,P] when an A-genitive is also present.} \\
\text{\quad (iii) in [Spec,Nnz,P] when it is an Agent.} \\
\text{An i-accusative marked Theme is Case checked by Casev.} \\
\text{An g-marked Agent is Case checked:} \\
\text{\quad (i) in [Spec,Pass,P].} \\
\text{\quad (ii) in [Spec,Nnz,P] when PassP is not present.}
\end{array}
\end{equation}

We have already seen from (26) and (28) that the (a) claim of (36) would be consistent with a pattern in which surface linear ordering matches with the relative hierarchical ordering of the Case checking projections in (8). Our task in this section is to determine if such precedence relations apply also to the full array of Case marking possibilities that are observed in nominalized forms as well.

The Case checking sites identified in (36) are matched schematically in (37) to show the available checking locations when an g passive Agent DP is included within the DP, both with and without distinct passive morphology.
In (37a) the passive morphology is overt and Casey is thus suppressed. Both CaseGen and Nmz have the capacity to check an O-genitive complement. In (37b) the passive interpretation is associated with Nmz which therefore checks the η-marked Agent. In the absence of the distinct Pass head, the complement DP is checked, as before, either as an η-accusative by Casey or as an O-genitive by CaseGen.

Observe that both (37a) and (37b) have identical linear precedence relations for the O DP and the g DP. Whereas the O DP consistently precedes the g DP in both (37a) and (37b), in (37b) we see that the g DP precedes the 1 DP. If the surface ordering matched exactly with the precedence relations for the checking heads shown in (37), then the surface outcome would present the same left to right ordering for the DPs as shown in (37).

The relative ordering of an g DP with respect to an O-genitive and with respect to an η-accusative requires more extensive investigation. Whereas we have seen (from (26) versus (28)) that an A-genitive must always precede an O-genitive, the evidence with respect to the ordering of an g DP relative to an O DP or an 1 DP indicates variability in the orderings.

The surface ordering issue is explicitly addressed in Carstairs (1970) who notes that, whilst variability is available for the ordering of the g DP and the O DP (shown in (32a,b)) the only permitted ordering in the g DP/1 DP combination has the 1 DP preceding the g DP:

(38a). *te patu-nga (e) Hone i te wahine [Carstairs 1970: (11)]
the kill-NMZ by Hone ACC the woman
b. te patu-nga i te wahine e Hone (= (30a))

However, Carstairs’ claim as represented by (38) would appear to be in conflict with the two examples (30b) and (30d) (both taken from texts), unless we were to infer that an unmarked ordering 1 DP - η DP can be overridden by an additional ‘heaviness’ principle such as invoked by Bauer (1993: 90) with reference to Theme/Agent orderings in the tensed passive clause.

In the case of the g DP/O DP ordering, in the data that I have seen, the apparently preferred ordering is for the O DP to precede the g DP. In this instance what appears to be the preferred ordering matches with the hierarchical precedence relations for O DP/g DP as shown in (37a) and (37b).

A preference for l DP/O DP - g DP ordering would match with the claims of Biggs (1969) with respect to the preferred ordering of Agent and Theme arguments in finite clause passives. Thus, Biggs considers that, whilst both (39a) and (39b) are fully acceptable, the preferred ordering is that of (39a):

(39a). Ka inimia te wai e te tangata. [Biggs 1969: 32]
the drink-PASS the water by the man

The general pattern, therefore, would be that, in all of the forms in which a passive Agent occurs in conjunction with a Theme argument, the preference could be for the Theme to precede the Agent. For a single account of such a preferred ordering we would need to suppose that the passive Agent remains in situ in [Spec,VP] at FP and that the Theme argument raises to at least the Spec of the relevant Case checking head. In the apparently less preferred pattern the Theme argument could remain in situ as complement of the lexical V head.17

Without more definitive evidence at this stage on the controlling factors affecting the different ordering possibilities, we will have to leave unresolved the nature of the mechanisms by which the diverse ordering patterns can be derived. What however, is clear with respect to the ordering patterns is that it is only a genitive DP (A or O) which may precede a head N/V and that, when both an A- and an O-genitive occur within the same DP, the A-genitive must precede the O-genitive. These facts suggest that the only DP that can precede an N/V head is the DP which can be checked by CaseGen.

In this account of nominalizing constructions we have seen that the inclusion of NmzP provides for the additional Case marking characteristics over and above what we get with the bare V inside a DP: the use of the double A/O genitive marking, the use of the O-genitive marking as the sole genitive marking applied to an Agent DP. We have also seen that the presence of Nmz can provide a construction with the capacity to include a Agent marking, without at the same time removing the use of the η-accusative Case.

The analysis that I have developed includes a functional projection "IdentP" immediately below the D head and above the highest Case checking projection "CaseGen". At FP the lexical V/N head raises to Ident. The [Spec,IdentP] position can be filled by an A-genitive, or by an O-genitive if an A-genitive is not present. This same [Spec,IdentP] can alternatively be filled by a demonstrative, or it can simply be left empty. In Section 6 to follow I introduce some comparative evidence

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17Whilst in Pearce (1993) I suggested that the ordering in which the nominative Theme precedes the g DP could be derived by extraposition of the g DP passive Agent, such an interpretation is not compatible with the mechanisms available under the Antisyzygy approach of Kayne (1994) which I am attempting to follow here.
which I think lends support to my proposal for the existence of a functional projection below D, the one that I am calling "IdentP".

6. Some comparative issues

The proposed Maori "IdentP" parallels with the AgrP's proposed for Italian and for Rumanian (Giusti 1993, 1994, Brugé 1996) and with the N-IP proposed in Szabolcsi (1989) for Hungarian. In these approaches to the syntax of the DP, the internal structure of the DP includes DP analogues of functional projections which have been hypothesized for the IP. In her analysis of the DP in Hungarian, Szabolcsi specifically proposes that the D of the DP is syntactically parallel to the C of the CP above IP. Similarly, the AgrP label adopted by Giusti is in parallel with the Agr(S)P label commonly used to identify the licensing site for the pre-verbal subject of the clause. The AgrP label itself is used in the representations of the IP and the DP in Italian and in Rumanian also has the advantage that it is transparent in signal what are actually concrete manifestations of agreement in both the IP and the DP in these languages.

For Maori, it could be seen as more appropriate on universalist grounds to adopt the AgrP label on the assumption that the checking function that it represents is general, overtly manifested in some languages, but not in others. However, I have felt that, rather than simply adopting the AgrP term, it may be more useful (even in the interests of the general theory) to introduce another focus into the discussion by adopting a label for Maori which would appear to best reflect what is distinctive about the Maori data: an apparent lack of correspondence in the syntax of IPs and DPs, including (i) the ordering contrast: clausal VSO versus NSO/SNO; and (ii) clausal Ω-nominal versus the split A/O genitive marking system. Further analysis of these distinctions, however, requires more research on the structure of both the IP and the DP in Maori. Although it may turn out that the "IdentP" of the Maori DP is indeed comparable to a parallel projection in the Maori clause, at the present time, the IP/DP differences appear to me to be more apparent than the similarities. The spirit in which I propose the IdentP label is akin to the notion behind the proposal of Szabolcsi (1989) for a 'Det' distinct from 'D'. Let us first, however, see some ways in which the top end of the Italian DP differs from the top end of the Maori DP.

Italian, like Maori and unlike English, exhibits cooccurrence of the determiner and the possessive:

(40a). il suo libro Italian  
(40b). t*-āna pukapuka Maori  
(40c). *the this book English

In both Italian and Maori the cooccurrence of the article and the possessive suggests that the possessive is housed in a projection below D. The same cooccurrence patterns however do not apply to the determiner and the demonstrative:

(41a). * il questo libro / *questo il libro Italian  
(41b). t*-nei pukapuka Maori  
(41c). *the this book / *this the book English

Suppose now that the ordering possibilities for Italian are as represented in the structure (42a), from Giusti (1993), and for Maori as in (42b).

(42a). Italian  
\[ \begin{array}{c}
\text{DP} \\
\text{Spec} \quad \text{D} \\
\text{AgrP} \\
\text{this} \\
\text{suo} \\
\text{book} \\
\end{array} \]

Maori  
\[ \begin{array}{c}
\text{DP} \\
\text{Spec} \quad \text{D} \\
\text{IdentP} \\
\text{te} \\
\text{Spec} \\
\text{Ident' \\
\text{pukapuka nei} \\
\end{array} \]

In Italian, when the demonstrative is in [Spec,DP] the D cannot contain an overt determiner (41a), although it can contain a raised N:

(43a). questo suo libro this his book 'this book of his'  
(43b). questo libro; suo h grey

Thus Italian and Maori use different positions for their demonstratives, but the same position for possessives (discounting the different phrase labels). One of the effects of the use of the [Spec,DP] position in Italian for the demonstrative is the absence of an overt determiner in D. In Maori the [Spec,DP] position remains unfilled at FF and the overt determiner is required in D. On the basis of these data, Italian and Maori are comparable in that, for both languages, either D or [Spec,DP] must be overt, but both positions cannot be overt (that is, cannot be overtly filled by a determiner-like element). Rumanian presents characteristics, some of which it shares with Italian and some with Maori:

(44a). omu-ul acesta man-the this  
(44b). acest om  
(44c). * acest om-ul [Giusti 1994: (21a,c,d)]

As seen in the data in (44), Rumanian has an enclitic article. Following the analyses of Giusti (1993, 1994) and Brugé (1996), the checking of D is implemented either through N -> D raising; (44a), or through movement of the demonstrative into [Spec,DP]; (44b). One or other of these licensing strategies can apply, but not both; (44c). In this respect Rumanian is like Italian in that when the demonstrative is in

\[ \text{See Longobardi (1994) for further discussion of N-raising in Italian, including an analysis of constructions in which there is neither an overt determiner nor an overt [Spec,DP].} \]
[Spec,DP] the determiner cannot be overt. However, whereas in Italian the demonstrative must move to [Spec,DP] (= (41a)), in Rumanian the demonstrative can remain in the Spec below D (44a). When the demonstrative remains below D in Rumanian, N -> V raising must apply.

The data in (45) provide the comparison between Rumanian and Maori for the position of the N with respect to a possessive.

(45a) portret-ul regelui t; [Giusti 1993: 19]
   the king's portrait
b. te pukapuka a te tama t; the book GEN the boy
   'the boy's book'
c. t; te tama pukapuka
   GEN the boy
   the boy's book

In both languages the possessives remain below D. In Rumanian N -> D raising must apply, as before, in order to implement the checking of D. For our interpretation of the Maori ordering in (45b), N does not raise to D, but it must raise to Ident. Thus, although the linear ordering of the constituents in (45a) and (45b) is directly comparable, the Rumanian N is in D, whereas the Maori N is in Ident.

The phenomena that we see at the "top end" of the DP in Italian and Rumanian seem to match best with phenomena that we have located as occurring in IdentP in Maori. Whereas in Italian and Rumanian, [Spec,DP] is a position optionally available to a demonstrative, in Maori, it is the Spec below D (i.e., [Spec,IdentP]) that is optionally available to a demonstrative. Whereas both Italian and Rumanian can have N -> D raising in certain constructions, no such raising applies in Maori in which the D position is reserved for the determiner. Thus, whereas in Italian and Rumanian it is within the D projection that we see the options being played out, in Maori it is in the projection immediately below D in which the alternative raising possibilities are realized (restricted, however, to the Spec position, but involving either a possessive or a demonstrative). In Maori the N/V alone may fulfill the requirements for overt content in IdentP.

This leaves the Maori D as a syntactically fairly inert kind of entity -- not greatly entering into alternations with other constituents within its immediate projection. Although for lack of space we cannot enter into a more extended discussion here of the semantics of the Maori determiner, there are a number of characteristics, especially of te, that have led Bauer (1993: 338) to suggest that it has the role of a default article. In applying the label "IdentP" to the projection below D it has been my intention to give a focus to the rather more semantically identifying function of this projection in Maori, syntactically supported by the obligatoriness of N -> Ident raising.

This interpretation is also somewhat in the spirit of the proposals of Stowell (1989) and of Szabolcsi (1989). Szabolcsi applies the term "DetP" to a projection below D and assigns to D the function of turning a predicate expression into an argument (Lambda-binding an open sentence into a generalized quantifier). For further extensions of this principle based on differences in the syntactic behaviour of kind referring and object referring nouns, see Longobardi (1994, 1996). Perhaps there is a distinction: article versus determiner, more readily identifiable in some languages than in others. It is such a distinction that I have envisaged here in the use of the two projections, DP and IdentP. That is, the article in Maori is simply a kind of place holder, whereas the determiner in both Italian and Rumanian has a distinct semantic role as well as being a place holder.

Whereas other accounts of DP syntax may derive alternations in surface orderings through overt/covert distinctions in head raising (the construct state versus the free genitive in Hebrew, Ritter 1991; and Giusti's N-raising account of the contrast between (43a) and (43b), for example), I have rather taken the view that N/V -> Ident is a constant of the overt syntax in Maori and that the surface alternations are derived from differing placement possibilities for the relevant XP constituents. For a full account of the DP-internal syntax of Maori many other aspects of DP syntax need to be examined in detail. The proposals in the present paper have focused particularly on the top end of the DP although, along the way, we have considered some implications for the behaviour of arguments lower down in the surface structure of the DP I look forward to pursuing these questions for Maori, and more, in future work.

References


Two Types of Evaluation Time and Subject Marking in Japanese

Shizuka Torii

Abstract

This paper takes a tense/aspect perspective on the challenging question as to what determines the choice between wa and ga to mark the so-called subject of a clause in Japanese. I distinguish two types of evaluation time, on which the truth of a clause is dependent, and to which I show that wa- and ga-marking of the subject correlate. Compared with Reichenbach's (1947) three temporal primitives, S, E, and R, the two types of evaluation time distinguish two types of R, one that coincides with S but not with E and the other that coincides with E but not with S. Due to the availability of two types of evaluation time, a single tense/aspect morpheme yields two distinct temporal and aspectual interpretations in a perfect correlation with wa- and ga-marking of the subject. This analysis thus defines an interrelation between tense/aspect and subject Case-marking in the syntax.

1. Introduction

The fundamental problem for the analysis of wa- and ga-marking in Japanese is largely due to the fact that the so-called subject of a clause can be marked by either wa or ga, as seen in (1).

    John come-Past

    John come-Past

A basic question as to what determines the choice between wa and ga to mark the subject of a clause has been a genuine challenge and a considerable amount of effort has been put into the investigation of the question from various theoretical standpoints (Endo 1994, Hinds 1987, Kuno 1973, Kuroda 1972, 1986, 1992b, Maynard 1987, Mikami 1960, Shirui 1986, Tateishi 1991, Uetake 1991-1992, among others).

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This paper approaches this issue from a tense/aspect perspective and sheds light on a particular dimension of wa/ge-marking of the subject. Notice that in (1A) I translate the predicate ki-ta 'come-Past' as 'came' when the subject is marked with wa in (1A) but as 'has just arrived' when the subject is marked with ga in (1B). The studies on tense/aspect in Japanese have been mainly concerned with the phenomena in subordinate clauses, which exhibit interesting contrasts with languages like English (eg, Kuno 1973, Nakau 1976, Ogihara 1989, Nakamura 1994). Although all of these discussions are useful contributions to our understanding of the tense/aspect system in Japanese, we also need to return to simple sentences and re-examine their temporal and aspectual interpretations to grasp the basis of the Japanese tense/aspect system. By doing this, we come to see the correlation between wa- and ga-marking of the subject and tense/aspect features.

The organization of this paper is as follows. In Section 2, I begin by distinguishing two types of evaluation time, on which the truth of a clause is dependent, and show that wa- and ga-marking of the subject correlate to the different types of evaluation time. In Section 3, I compare the two types of evaluation time with Reichenbach's (1947) three temporal primitives, S, E, and R and show that they correspond to two different types of R: one that coincides with S but not with E and the other that coincides with E but not with S. Section 4 turns to the temporal relations specified between R and S on the one hand and E on the other hand (when R = S and R ≠ E) and between S on the one hand and R and E on the other (when R = E and R ≠ S). Assuming that Japanese tense morphemes, -ta, -ru, and -teiru, carry relational meanings, 't', 'r', and 'i', I show that both relations are specified by these morphemes and that these morphemes specify the temporal relation between S and R/E when the subject is marked with wa and that between R/S and E when the subject is marked with ga. Section 5 shows that those morphemes can also be considered to denote aspectual meanings, completed, inchoative, and ongoing, which modify either a remote event as a whole when the subject of the clause is marked with wa, or a cross-section of an immediate event when the subject of the clause is marked with ga. In conclusion, a single tense/aspect morpheme can yield two distinct temporal and aspectual interpretations, due to two types of evaluation time, which distinguish two different types of event. Which one of the two possible interpretations obtains perfectly correlates to whether the subject of the clause is marked with wa or ga. This suggests that subject marking in Japanese is clearly related to tense/aspect in the syntax.

1 In order to focus on the basic contrast between wa and ga, I only deal with what may be called their neutral interpretations, which correspond to the "thematic" interpretation of wa and the "neutral description" reading of ga in Kuno's (1973) terminology.

2 Nakau (1976) includes also a survey of the tense/aspect phenomena in main clauses. Besides this, the basic tense/aspect phenomena in main clauses have been studied within the traditional kogage-gaku linguistics (e.g., Kudachi 1950, 1959).

2 Two Types of Evaluation Time

In this section, I distinguish two types of evaluation time, on which the truth of a clause is dependent, and show that wa- and ga-marking of the subject correlate to the two types of evaluation time.

2.1 'Original' versus 'new' evaluation time

To observe a distinction between two types of evaluation time, let us first refer to the traditional analysis of tense as a sentential operator (as in Prior 1967 and Moncton 1974 among others). For example, the interpretation of a sentence with past tense is accounted for by the rule (2) (Eng 1987: 633).

(2) The interpretation of a past tense sentence:
Where $\phi$ is a sentence [and PAST is the past operator], PAST$\phi$ is true at time $t$ iff there is a time $t'$ such that $t' < t$ and $\phi$ is true at $t'$.
($< \phi$ indicates that what is on the left-hand side of the symbol precedes what is on the right-hand side of it.)

(3) (adapted from Eng 1987: 633)

According to (2), a past tense sentence, say John ate an apple, is true at the utterance time t iff there exists a time, $t'$, prior to $t$, such that John eats an apple is true at $t'$. In this view, the truth of a sentence at the utterance time $t$ does not "depend on" $t$, but on another time $t'$, which is designated by a tense operator.3

By contrast, the truth of a sentence like John is eating an apple is solely dependent on the utterance time $t$ (without recourse to another time $t'$). John is eating an apple is true at $t$ if John is eating an apple at $t$. In such a case, the utterance time $t$ serves as the evaluation time not only for the truth of a sentence but also for the event described in the sentence. Therefore, there is no need for another time $t'$ to be introduced.

While utterance time $t$ naturally comes into being every time something is uttered, another time $t'$ is specially introduced when it is needed for the interpretations of some sentences, such as sentences in past tense. In other words, while utterance time $t$ alone is sufficient for the temporal interpretation of a sentence in some cases, another time $t'$ needs to be introduced in other cases.

Since utterance time $t$ is a naturally occurring time and it is most natural that the truth of a sentence is dependent on the time of utterance, we can consider utterance time $t$ as the 'original' evaluation time.4 On the other hand, another time $t'$ comes into existence only when needed. And when it does, it

3 However, $t'$ is dependent on $t$ in that it is defined in relation to $t$. In what follows I use the expression "depends on (or is dependent on)" in the sense indicated by the discussion in the paragraph. When the utterance is evaluated at $t$ but the event being spoken of is verified at $t'$, the truth of the utterance is dependent on $t'$.

4 I define evaluation time as the time at which the event described in a sentence is verified, rather than the time on which the truth of a sentence is evaluated, though the two times can be the same.
takess over the power of utterance time \( t \) as evaluation time and makes a 'new' evaluation time.\(^5\)

Interestingly enough, the two types of evaluation time, \( t \) and \( t' \), constantly correlate to \( ga \)- and \( wa \)-marking of subject respectively: when the subject is marked with \( ga \), the truth of a sentence is dependent on the original evaluation time \( t \), and when the subject is marked with \( wa \), the truth of a sentence is dependent on a new evaluation time \( t' \).

Compare the temporal and aspecual interpretations given to (1a) and (1b) above, which are repeated in (3) below.

(3) a. John-wa ki-ta. 'John came.'
   John come-Past

b. John-ga ki-ta. 'John has just arrived.'
   John come-Past

The sentence (3a) with a \( wa \)-marked subject is interpreted as asserting that the event of John's coming took place at a certain time in the past.\(^6\) The truth of (3a) is taken as relative to a time which is located prior to the time of utterance. On the other hand, (3b) with a \( ga \)-marked subject is interpreted as describing a present situation in which John has just arrived.\(^7\) Although John's arrival must have taken place somewhere before the moment of utterance, the event is perceived and described as having just been completed from the perspective of the utterance time. In this sense, the truth of (3b) is dependent on the utterance time. That is, the utterance time \( t \) alone is sufficient for the temporal interpretation of (3b) with a \( ga \)-marked subject, while another time \( t' \), which is located prior to \( t \), is required for the temporal interpretation of (3a) with a \( wa \)-marked subject.\(^8\)

\(^{5}\) See footnote 4.

\(^{6}\) In order to get the neutral interpretation of the \( wa \)-marked subject (rather than the contrastive interpretation), imagine that (3a) is uttered as an answer to a question Did John come to the party?

\(^{7}\) Although (3b) is translated as present perfect in English, it only represents one particular interpretation of English present perfect, namely the 'just completed' interpretation.

\(^{8}\) However, if a time adverb such as \( ki \) 'yesterday' or \( ni \) 'at three o'clock' occurs with (3b), (3b) is not interpreted as describing a present situation but clearly a past situation. In such cases, a past situation is described in retrospect, as though we are back at that particular spatiotemporal location in the past. Therefore, although the truth of the sentence is not dependent on the 'real' present moment or the utterance time, it is dependent on a "pseudo-present." I take a view that \( t \) refers to a time recognized as the present in the discourse, which is typically the utterance time but can be other temporal moments (see 3.3 below).

Let us examine a couple more \( wa/ga \) pairs of sentences, which have different tense/aspect morphemes. The examples in (4) below have the \(-ru \) morpheme instead of \(-ta \) in (1) above. The sentence (4a) with a \( wa \)-marked subject receives a future reading that John will come sometime in the future. The sentence (4b) with a \( ga \)-marked subject, on the other hand, is interpreted as describing a present situation in which John is actually coming or in fact we see John actually coming to the place of utterance at the time of utterance.\(^9\)

(4) a. John-wa ku-ru. 'John will come.'
   John come-Pres

b. John-ga ku-ru. 'John is coming. (Here comes John.)'
   John come-Pres

While the truth of (4b) with a \( ga \)-marked subject is dependent on the utterance time \( t \), the truth of (4a) with a \( wa \)-marked subject is dependent on another time \( t' \) (which is after \( t \)).

The same contrast is observed even when the predicate is in the \(-teiru \) present progressive form, as in (5) below.

(5) a. John-wa hon-o kai-te-ru. 'John is writing a book.'
   book-Acc write-Prog-Pres

b. John-ga hon-o kai-te-ru. 'John is writing a book.'
   book-Acc read-Prog-Pres

Both (5a) and (5b) express a present ongoing situation of John's writing a book. However, while (5b), whose subject is marked with \( ga \), can only be uttered on the spot where the speaker perceives the actual situation in which John is writing a book, (5a), whose subject is marked with \( wa \), can be uttered even when John is not actually writing at the time of speech. For example, (5a) can be uttered in a speech situation where you are introducing John, who is standing next to you (and hence not writing a book), as in \( This \) is \( John \). \( John \) is \( writing \) a \( book \). This suggests that while (5b) conveys that there is an actual situation in which John writes a book going on right in front of the speaker at the moment of speech, (5a) does not necessarily mean that John is actually writing a book at the moment when the sentence is uttered (though it can be well uttered when John is actually writing too).

\(^{9}\) \( ki \)-in (5) and \( ku \)-in (4) are phonological variants of a verb 'to come.'
This contrast between (5a) and (5b) can be illustrated by the range of temporal adverbials which can cooccur with each sentence. Adverbials such as saikin 'these days' and itsumo 'always' are compatible with (5a) but not with (5b), as shown in (6) below. (The asterisk on (6b) indicates that the addition of one of these adverbials to (5b) forces the focus interpretation of the ga-marked subject.)

    these days/always book-Acc write-Prog-Pres
    'John is writing a book these days.' /John is always writing a book.'

    these days/always book-Acc write-Prog-Pres

The compatibility of (5a) with saikin 'these days' or itsumo 'always' makes it clear that (5a) does not convey that John is actually writing a book at the moment when it is uttered. Thus, while the truth of (5b) with a ga-marked subject is totally dependent on the utterance time t, that of (5a) with a wa-marked subject is not strictly dependent on t but rather dependent on another time t', which embraces t in it.

However, both (5a) and (5b) can take ima 'now', as shown in (7) below. With ima 'now' both examples in (7) have to mean that John is writing a book now.

(7) a. Ima John-wa hon-o kai-tei-ru.
    now book-Acc write-Prog-Pres
    'John is writing a book now.'

b. Ima John-na hon-o kai-tei-ru.
    now book-Acc write-Prog-Pres
    'John is writing a book now.'

Nonetheless, we can still observe the same contrast between (7a) and (7b). The proposition (7a) will hold true even if John is sipping his coffee in the middle of writing at the time when the sentence is uttered, whereas (7b) will be evaluated as false if it is uttered when John is sipping his coffee in the middle of writing. In other words, while (7a) strictly requires that John be actually writing at the moment of utterance for it to be true, the truth of (7a) is evaluated more loosely at a loosely defined present time which includes the utterance time. (The word ima 'now' itself is interpreted in two ways. It is taken as referring to a precise temporal point of the present which corresponds to the moment of utterance in (7b) and to a loosely defined present time which includes the utterance time in (7a).) That is, while the truth of (7b) is totally dependent on the utterance time t, that of (7a) is rather dependent on another time t', which is a loosely defined present time embracing the utterance time t.\(^{11}\)

Thus, the two types of evaluation time, t and t', constantly correlate to ga- and wa-marking of subjects respectively. When the subject is marked with ga, the truth of a sentence is dependent on the utterance time t. When the subject is marked with wa, the truth of a sentence is dependent on another time t'.

2.2. Spatiotemporal boundedness

The subtle but sound contrast observed between the interpretations of (7a) and (7b) above indicates that while a sentence with a ga-marked subject is interpreted as being strictly bounded at a particular spatiotemporal location, a sentence with a wa-marked subject is interpreted more loosely. In this subsection, I show that, while the original evaluation time t, which a sentence with a ga-marked subject is dependent on, refers to a well-defined singular point in time, a new evaluation time t', which a sentence with a wa-marked subject is dependent on, does not single out a precise temporal point but rather refers to a more loosely defined time.\(^{12}\)

Let us now imagine a situation in which John is standing there. If you know that John has been standing there for some time and still see him standing there, you will say (8a), in which the subject John is marked with wa. But if you have just noticed for the first time that John is standing there, you will say (8b), in which the subject John is marked with ga.

    that-place at stand-Prog-Pres
    'John is standing there.'

    that-place at stand-Prog-Pres
    'John is standing there.'

This suggests that (8a) with a wa-marked subject implies a duration of the described present situation, whereas (8b) with a ga-marked subject describes the present situation more as a transient situation holding at that very moment. In other words, the intension of (8b) is spatiotemporally bounded, whereas that of (8a) is not.

This contrast in spatiotemporal boundedness is always observable between wa- and ga-sentences, irrespective of the predicate form. Let us return to the above examples, (3) with the ta-form of a verb and (4) with the ru-form, which are repeated in (9) and (10) below.

\(^ {10}\) With the focus interpretation of the subject, (6b) gives an interpretation that it is John who is writing a book these days—it is John who is always writing a book.

\(^ {11}\) Although I do not discuss the past progressive form -teita for the reasons of simplicity, it also exhibits the contrast between t and t' with wa- and ga-marking of the subjects if we take a view

\(^ {12}\) Note that, in referring to a punctual temporal point and a clause's being dependent on t do not entail that the event described in the clause is punctual (as opposed to durative or ongoing). For example, a clause describing a durative event as progressing is dependent on a punctual temporal point t, in the sense that the event is perceived and described as progressing from the perspective of the particular point in time (and space).
To conceptualize the distinction between a pronominal manifestation of an event and an event as a whole, it may be helpful to refer to Jackendoff’s (1996) decomposition of a situation. Comparing situations to objects such as a cylindrical tube and an H-beam, Jackendoff decomposes a situation into axis plus cross-section so that if we take a slice of a situation at any point of the axis, we get a representative cross-section of the situation. Since Jackendoff uses the term ‘situation’ as a supercategory under which ‘event’ and ‘state’ are subsumed and we use the term ‘event’ without implying any distinction between eventive and non-eventive aspectual classes of predicates, what Jackendoff refers to by ‘situation’ and what I refer to by ‘event’ correspond to each other. Therefore, a pronominal manifestation of an event is a cross-section of a situation intersecting at a particular point on the time axis and a whole event is an undecomposed situation. In these terms, an event described in a sentence with a wa-marked subject is necessarily taken as a cross-section of the event (whether an end or a middle cross-section), whereas an event described in a sentence with a wa-marked subject is taken as an undecomposed whole event.

This suggests that the utterance time $t$, which a sentence with a wa-marked subject is dependent on, refers to a single temporal point and therefore cuts out a cross-section of an event intersecting at that particular point on the time axis. On the other hand, another time $t'$, which a sentence with a wa-marked subject is dependent on, refers to a more loosely defined time, which extends (at least) over the whole length of the time axis of the event. Therefore, $t'$ as the evaluation time leaves an event as a whole without decomposing it.

Lastly, although $t$ refers to a precise temporal point and $t'$ refers to a more loosely defined time, whether the clause is dependent on $t$ or $t'$ does not restrict the selection of temporal adverbials. For example, a non-eventive adverbial such as kina ‘yesterday’ can occur not only in a clause dependent on $t$ but also in a clause dependent on $t'$, as seen in (11) below. While (11a) is interpreted as asserting that the event of John’s eating ice cream took place yesterday, (11b) is interpreted as retrospectively describing an actual situation in which John eats ice cream, that occurred at a certain time yesterday. Both the undecomposed whole event in (11a) and a pronominal manifestation of the event as in (11b) can be modified by a non-eventive adverbial kina ‘yesterday’, because it covers both the whole event time and a pronominal event time.

However, the examples discussed in this paper are all eventive predicates. In fact, the contrasts in temporal and aspectual interpretations I claim to hold between sentences with wa-marked subjects and those with ga-marked subjects do not necessarily hold with non-eventive predicates. For example, both (a) with a wa-marked subject and (b) with a ga-marked subject receive the past tense interpretation only. The asterisk on (b) indicates that the sentence cannot yield the neutral interpretation and that the ga-marked subject can only be interpreted as being in focus.

(a) John-wa byooka da-ta. John was sick.
sick Cop-Past
(b) "John-ga byooka da-ta. It was John who was sick.
sick Cop-Past

Although this certainly suggests interactions between event types and temporal and aspectual interpretations, I leave this issue for future research.
Thus, whether a clause is dependent on \( t \) or \( t' \), it can occur with both a point and a non-point adverbial. Irrespective of the presence of whatever temporal adverbial, a clause with a \( ga \)-marked subject, which is dependent on \( t \), is necessarily interpreted as being bound at a particular spatiotemporal location, whereas a clause with a \( wa \)-marked subject, which is dependent on \( t' \), is interpreted more loosely.

2.3. Summary

In this section, I have shown that there are two types of evaluation time, the utterance time \( t \) and another time \( t' \), which constantly correlate to \( ga \)- and \( wa \)-marking of the subject respectively. The utterance time \( t \) and another time \( t' \) are distinguished as the original versus a new evaluation time, while the former refers to a precise temporal point, the latter refers to a more loosely defined time.

To further identify the properties of \( t \) and \( t' \), in the next section, I compare them with Reichenbach’s (1947) three temporal primitives, \( S \), \( E \), and \( R \).

3. Reichenbach’s (1947) Three Temporal Primitives

3.1. \( S \), \( E \), and \( R \)

Within the Reichenbachian framework, a tense is represented as a complex of three temporal entities (‘times’), temporally ordered with respect to one another (whether one precedes, follows, or coincides with the other(s)). The first, denoted by \( S \), refers deictically to the utterance time and is, therefore, called ‘speech time’. The second, \( E \) denotes the time of the event instantiated by the predicate of the clause and is, therefore, called ‘event time’. The third, \( R \) stands for ‘reference time’ and serves as a ‘point of view’ (particularly for perfect tenses).

In terms of these three temporal primitives, \( S \), \( E \), and \( R \), what do the two types of evaluation time, \( t \) and \( t' \), correspond to?

3.2. \( t \) and \( t' = R \)

Firstly, both \( t \) and \( t' \) correspond to \( R \), because what Reichenbach calls reference time (\( R \)) is essentially the same as what I have been calling evaluation time.

Reichenbach introduces \( R \), showing that \( R \) is required to account satisfactorily for the semantics of perfect tenses. For example, consider the temporal interpretation of a sentence discussed in Giorgi and Pianesi (1991) when Mary entered the room (at 5), John had already left (at 4). The subordinate clause when Mary entered the room fixes a reference point for the main clause John had already left. The time of the event of Mary’s entering the room, which is located prior to \( S \), serves as \( R \), and the event of John’s leaving is located prior to this \( R \). This temporal interpretation is represented as in (13), where a line between two points signifies that the leftmost point is interpreted as temporally earlier than the other.\(^{16}\)

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\(^{14}\) Because of the scope of the adverbial in (12a), it is more natural to put ichi-ji juugo-hun ni 'at one fifteen' after the \( wa \)-marked subject, as shown in (i) below.

(i) Subete-no- gakusei-wa ichi-ji juugo-hun ni ki-ta.
All-of-students one-o’clock fifteen-min. at come-Past

All of the students came at one fifteen.

If the point adverbial is put after the \( ga \)-marked subject, as in (ii) below, the \( ga \)-marked subject is interpreted as being in focus.

(ii) Subete-no- gakusei-ga ichi-ji juugo-hun ni ki-ta.
All-of-students one-o’clock fifteen-min. at come-Past

'All of the students who came at one fifteen.'

\(^{15}\) Ichii-ji juugo-hun ni 'at one fifteen' modifies the event time in (12a) and the reference time in (12b). (cf. Brogger 1997b for the distinction between event time modification and reference time modification.)

\(^{16}\) The graphical notation is due to Hornstein (1990).
Reichenbach considers R as a formal device which must be instantiated even when it does not appear to be immediately connected to a semantic interpretation. For example, the temporal interpretation of he will eat tomorrow does not involve the notion of "point of view" (as in the interpretation of perfect tenses), but its representation still involves R. In this case, the reference time, which is overtly specified by the time adverb tomorrow, is aligned with the time of the event of eating, since we know from this sentence that the event will take place as specified by R, ie, tomorrow. Therefore, S precedes both R and E, as represented in (14), where a comma signifies that two points are contemporaneous.

\[(14) \quad S, R, E\]
\[\text{tomorrow} \quad \text{(example from Giorgi and Pianesi 1991: 190)}\]

Notice that in both of the examples represented in (13) and (14) above, R is the time on which the truth of a clause is dependent. In (13), the truth of the main clause John had already left is relative to the time specified by the subordinate clause when Mary entered the room, which is represented with R. In the sense that the event of John’s leaving is perceived as having already been completed from the perspective of the point in time when Mary entered the room. In (14), the truth of he will eat is relative to the time specified by the time adverb tomorrow, which is also represented with R. This suggests that Reichenbach’s R refers to the time on which the truth of a clause is dependent, ie, the evaluation time in my terminology. Thus, two types of evaluation time, t and t’, both correspond to R as the time on which the truth of a clause is dependent. This means that I am dividing Reichenbach’s R into t and t’, ie, distinguishing two types of R.

3.3. \(R = S\) and \(R \neq S\)

It is rather obvious from the definitions that the utterance time t corresponds to S and that another time t’ is distinct from S. That is, t and t’ distinguish two types of R; one that coincides with S and the other that is distinct from S.

For a simple illustration, compare the R in John ate an apple yesterday and that in John is eating an apple now. In each case, R is overtly specified by the time adverb yesterday in the former and now in the latter sentence. The R which is specified by yesterday precedes S and therefore is clearly distinct from S. By contrast, the R which is specified by now coincides with S. R coinciding with S corresponds to the utterance time t serving as the evaluation time, whereas R distinct from S corresponds to another time t’ serving as the evaluation time.

It has been pointed out (eg, Hornstein 1990) that S, besides referring deictically to the speech time, in some contexts can also refer to the time specified by other sentences in the discourse or can connect the tense representation of a subordinate clause with that of the main one. Take the view that S refers to a time recognized as the present in the discourse, which is typically the utterance time, although in narrative types of situations, other temporal moments can be recognized as the present as an outcome of other sentences in the discourse establishing a "pseudo-present". The notion of pseudo-present in narratives can be extended to complex sentences in which the subordinate clause specifies a particular spatiotemporal location as a reference point for the main clause. In when Mary entered the room, John had already left, for example, the subordinate clause when Mary entered the room specifies a particular spatiotemporal location in the past as a reference point for the main clause John had already left. The subordinate clause functions as though it brings the interlocutors back to the specific spatiotemporal location in the past and the time it specifies becomes a temporary "pseudo-present".

According to this view, the time specified by when Mary entered the room is S, which fixes a "pseudo-present" for the main clause John had already left. And this S serves as R in interpreting that John’s leaving has already been completed. Therefore, the temporal interpretation of this sentence should be represented as in (15) below, where R and S coincide. Since R coincides with S (ie, R = S), this is a case in which t serves as the evaluation time.

\[(15) \quad E, R, S\]
\[\text{Mary’s entering the room}\]
\[\text{John’s leaving}\]

By contrast, in he will eat tomorrow, the reference time specified by tomorrow is understood as the day after the day on which the sentence is uttered. In this case, R is defined in terms of its relation to S, where R and S are clearly distinct. Such an R distinct from S corresponds to t’ serving as the evaluation time.

Thus, the two types of evaluation time, t and t’, distinguish between the two cases; one in which the reference time coincides with the speech time (R = S) and the other in which the reference time is distinct from the speech time (R \(\neq S\)).

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17 The S for the main clause is distinct from the "real" S which refers to the time of speech. It actually corresponds to the E for the subordinate clause, which is located prior to the "real" S.

18 When we take S as a deictic element which designates the moment which is recognized as the present in the discourse and acts as the anchor for the temporal interpretation, all perfect tenses, present, past, and future perfect, are represented identically as E, R, S (or E, S, R).
(16) a. \( t : R = S \)
    b. \( t' : R > S \)

3.4. \( R \neq E \) and \( R = E \)

Let us now look at the two types of \( R \) in terms of their relations to \( E \).

An \( R \) which corresponds to \( S \) has the intuitive sense of \( R \) as a "point of view". It functions as a reference point from which the event is viewed and in relation to which the time of the event is located. Such an \( R \) is observed in the representation of a perfect tense "\( E_R, S \)" as in (15) above, where \( E \) is located prior to the \( R = S \) point. On the other hand, an \( R \) which is distinct from \( S \) lacks the intuitive sense of a "point of view" from which an event is viewed, and is in fact always aligned with \( E \). It is illustrated in the representation of a future tense "\( S_R, E' \)" in (14) above, where \( R \) is attached to \( E \).

With the former type of \( R \), the temporal location of \( E \) is defined in relation to the \( R = S \) point, as in the representations in (17) below, whereas with the latter type of \( R \), the temporal relation is specified between \( S \) on the one hand and \( R \) and \( E \) on the other, as seen in the representations in (18) below.

(17) a. \( E_R, S \) \( \quad \text{eg. John has (just) left.} \)
    b. \( R, S_E \) \( \quad \text{eg. John is leaving (now).} \)

(18) a. \( R, E_S \) \( \quad \text{eg. John left.} \)
    b. \( S_R, E \) \( \quad \text{eg. John will leave.} \)

The crucial difference between the two sets of representations is whether \( R \) is aligned with \( S \) and not with \( E \) (as in (17)) or aligned with \( E \) and not with \( S \) (as in (18)). Notice that apart from this difference, both (17) and (18) specify the temporal relation between \( S \) and \( E \). To see this, cover up all the \( R \)s in the representations in (17) and (18) above. The representations in (17a) and (18a) and those in (17b) and (18b) have identical \( S-E \) relations.

The same \( S-E \) relations yield distinct temporal and aspectual interpretations, depending on whether \( R \) is aligned with \( S \) (and not with \( E \)) or aligned with \( E \) (and not with \( S \)). When \( R \) is aligned with \( S \), i.e., \( R = S \), the truth of a clause is dependent on the "present" moment (including pseudo-present) and hence the event described in the clause is taken as holding at the "present" moment. Therefore, \( E \) located in relation to \( S \) functioning as \( R \) (as in (17) above) must be very immediate to \( S \). For example, in "\( E_R, S \)", \( E \) is located immediately before \( S \). This yields an interpretation that the event has just taken place, i.e., the perfect interpretation. In "\( R, S_E \)", \( E \) is located immediately after \( S \). This yields an interpretation that the event is going to take place immediately, i.e., the inchoactive interpretation.

On the other hand, when \( R \) is distinct from \( S \), i.e., \( R \neq S \), the truth of a clause is dependent on another time distinct from the present moment and hence the event described in the clause is taken as somewhat remote from the present moment. \( E \) aligned with \( R \) (as in (18) above) is therefore remote from \( S \). For example, in "\( R, E_S \)", \( E \) is located remotely before \( S \). This yields an interpretation that the event took place at a past time somewhat remote from the present moment, i.e., the past tense interpretation. In "\( S_R, E' \)", \( E \) is located remotely after \( S \). This yields an interpretation that the event will take place at a certain time in the future, remote from the present moment, i.e., the future tense interpretation.

Furthermore, \( R \) corresponding to \( S \) refers to a spatiotemporal location (fixed by \( S \) in the speech context) and locates \( E \) with respect to that spatiotemporal location. Such an \( R \) cuts out a cross-section of an event intersecting at \( S \). On the other hand, \( R \) aligned with \( E \) refers to the time of event. With such an \( R \), an event is seen as a whole without being decomposed.

What is important for our present purpose is that when \( R \) coincides with \( S \), it is necessarily distinct from \( E \) (as seen in (17) above) and that when \( R \) is distinct from \( S \), it necessarily coincides with \( E \) (as seen in (18) above). Since the two types of evaluation time, \( t \) and \( t' \), correspond to \( R \) which coincides with \( S \) and \( R \) which is distinct from \( S \) respectively, they also distinguish between \( R \) which is distinct from \( E \) and \( R \) which coincides with \( E \).20

(19) a. \( t : R = S \)
    b. \( \quad x = E \)

b. \( t' : R \neq S \)
    b. \( \quad x = E \)

3.5. Conclusion

To sum up, I have shown that the two types of evaluation time, \( t \) and \( t' \), both correspond to Reichenbach's reference time \( R \) and distinguish two types of it. The original evaluation time \( t \) corresponds to \( R \) which coincides with \( S \) \((R = S)\) and is distinct from \( E \) \((R = E)\). A new evaluation time \( t' \) corresponds to \( R \) which is distinct from \( S \) \((R \neq S)\) and coincides with \( E \) \((R = E)\).

Since the two types of evaluation time, \( t \) and \( t' \), correlate to "ge" and "wa"-marking of the subject respectively, it means that the subject is marked with "ge" when \( R = S \) and \( R = E \) and with "wa" when \( R \neq S \) and \( R = E \).

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19 Bertinetto (1986) also distinguishes \( R \) which follows \( E \) in the perfect tenses from \( R \) which is interpreted as simultaneous with \( E \). For him, only the former \( R \) is \( 'R' \) and the latter \( R \) is called \( 'L' \) (event localizing function). While \( R \) fixes the internal reference which is intrinsically (intentionally) required for semantic interpretation, \( L \) chronologically specifies the location of \( E \) extrinsically (extensively) in the sense it is not intrinsically required.

20 Notice that Priorian \( t \) and \( t' \) are defined in terms of Reichenbach's \( S \), \( E \), and \( R \). This indicates an intersection between the two approaches to tense. Blackburn (1994: 88) also points out that Priorian tense logic gives a clear account of Reichenbach's \( S \) and \( E \) the point of speech is the point in the model at which the utterance is evaluated, while the point of event is the point in the model where the event being spoken of is verified. That is, \( t \) corresponds to \( S \) and \( t' \) corresponds to \( E \).
4. Tense Morphemes and Their Relational Meanings

In the previous section, I have distinguished two types of R: one that coincides with S but not with E and the other that coincides with E but not with S, which correlate to ga- and wa-marking of the subject respectively. In this section, I turn to the temporal relations specified between R and S on the one hand and E on the other hand (when R coincides with S but not with E) and between S on the one hand and R and E on the other (when R coincides with E but not with S) and show that both relations are specified by identical tense morphemes in Japanese. Each of the Japanese tense morphemes can yield two distinct temporal and aspectual interpretations, depending on whether the morpheme specifies the temporal relation between R/S and E (when the subject is marked with ga) or that between S and R/E (when the subject is marked with wa).

4.1 Relational meanings

Let me start with spelling out the assumptions I make, and on the basis of which I present the following discussion.

Firstly, I assume that the Japanese tense morphemes such as -ta, -ru, and -teiru carry relational meanings such as '>', '<', and '='. A relational meaning '>' temporally locates what follows it prior to what precedes it. That is, if A > B, B is temporally located prior to A. Therefore, A > B can read: A follows B, B precedes A. A is preceded by B, or B is followed by A. A relational meaning '<' temporally locates what follows it after what precedes it. That is, if A < B, B is temporally located after A. Therefore, A < B can read: A precedes B, B follows A. A is followed by B, or B is preceded by A. A relational meaning '=' indicates that what precedes it is included in what follows it. That is, if A = B, B includes A or A is included in B.

Secondly, no matter how we read a relation (eg. A follows B, B precedes A, A is preceded by B, or B is followed by A), a relational meaning defines the temporal location of what follows it with respect to what precedes it. That is, what is on the left-hand side of the symbol serves as a reference point for what is on the right-hand side of it. In the relation between R and S on the one hand and E on the other, the R = S point functions as a "point of view" from which an event is viewed and with respect to which the time of the event is located. Since the R = S point serves as the reference point for E, the relation between R/S and E is represented as 'R, S \* E' (where * is a variable for relational symbols). On the other hand, in the relation between S and the one hand and R and E on the other, the location of R and E is defined in relation to S. Recall that such an R that is distinct from S corresponds to another time t' serving as the evaluation time. Another time t" is totally dependent on the utterance time t in the sense that t' exists only in relation to t. Therefore, such an R is defined in terms of its temporal relation to S. Since S serves as a reference point with respect to which the temporal location of R (together with E) is defined, the relation between S and R/E is represented as 'S \* R, E'.

Equipped with these notations, we get the following six tense representations:

\[\begin{align*}
R, S \* E & \quad S > R, E \\
R, S < E & \quad S < R, E \\
R, S = E & \quad S = R, E \\
\text{(subject-ga)} & \quad \text{(subject-wa)}
\end{align*}\]

The same set of relational meanings, >, <, and =, supposedly denoted by the same set of tense morphemes, link either R/S and E or S and R/E. That is, the same tense morphemes carrying the same relational meanings can specify either the relation between R/S and E or that between S and R/E. Since the subject is marked with ga when R = S and R \# E (ie. t) and with wa when R = E and R \# S (ie. t'), we can expect that a tense morpheme specifies the relation between R/S and E with a ga-marked subject, and a relation between S and R/E with a wa-marked subject.

To verify this, I review the two distinct temporal and aspectual interpretations given to the wa/ga-minimal pairs of sentences in Section 2 and demonstrate that the two temporal and aspectual interpretations represent the cases in which the tense morphemes specify the relation between S and R/E and those in which they specify the relation between R/S and E.

It is important to remember that E located in relation to the R = S point is taken as being very immediate to S, whereas E aligned with R is taken as being remote from S and that R corresponding to S cuts out a cross-section of an event, whereas R aligned with E leaves an event as a whole (without decomposing it).

4.2 Ta

We have observed in Section 2 that a ta-form, ki-ta 'come-Past', yields a past tense reading with a wa-marked subject and a present perfect reading with a ga-marked subject. We can now represent our earlier examples (repeated in (21) below) in terms of their S/E/R designations:

\[\begin{array}{ll}
(20) & \begin{align*}
R, S > E & \quad S > R, E \\
R, S < E & \quad S < R, E \\
R, S = E & \quad S = R, E \\
\text{(subject-ga)} & \quad \text{(subject-wa)}
\end{align*}
\end{array}\]

\[\text{The relations between R/S and E and those between S and R/E correspond to what Comrie (1985) calls relative and absolute tenses respectively. Comrie distinguishes relative tenses from absolute tenses in that while in absolute tenses the reference point for the location of a situation in time is the present moment, in relative tenses it is some point in time given by the context, which is not necessarily the present moment. Comrie represents relative tenses as relations between S and E and absolute tenses as relations between R and E. The relations between R/S and E and those between S and R/E also correspond to the two two-place relations between R and E and between S and R, which have been regarded as the preferred replacement for Reichertbach's three-place relations among S, E and R for both empirical and theoretical reasons (Comrie 1985, Vliet 1985, Hornstein 1990). These two relations have been further claimed to be instantiated by tense morphemes when the two points are intended to be different (Giorgi and Pianesi 1991)).}\]
I assume that the morpheme -ta conveys a relational meaning ‘>,’ which can connect either S and R/E or R/S and E. When the relation ‘>’ connects S and R/E, i.e., “S > R, E,” E is located away from S in the remote past. This yields an interpretation that the event described in the clause took place at a past time somewhat remote from the present moment. The past tense reading in (21a) is an instance of this case. The event of John’s coming described in the sentence is interpreted as a past event which took place at a past time somewhat remote from the moment of speech and therefore seen as a whole.

On the other hand, when the relation ‘>’ connects R/S and E, i.e., “R, S > E,” E is located immediately before S. This yields an interpretation that the event described in the clause has just been completed and as the end cross-section of the whole event.

The situation with -ru is a little more complicated, as there are four distinct interpretations that -ru can possibly yield. We have seen in Section 2 that a ru-form, ku-ru ‘come-Pres,’ yields a future reading with a s-marked subject and a present progressive reading with a g-marked subject. To repeat the examples, (22a) is interpreted as asserting that John will come sometime in the future, whereas (22b) is interpreted as describing a present situation in which John is actually coming to the place of speech at the time of speech (which is perceived by the speaker).

Another ru-form, for example, ware-ru ‘break-Pres,’ exhibits a different contrast. In (23a) below, the (a) sentence receives a generic reading that a balloon breaks, whereas the (b) sentence is interpreted as describing an urgent situation in which a balloon is going to break (in such a situation that somebody is holding a needle to prick a balloon or squashing a balloon right in front of the speaker).

22 It has been noted that the distinction between the simple past and the present perfect has not been captured in standard tense logic (Blackburn 1994: 89). My analysis suggests that the difference between the two interpretations (i.e., past and perfect) derives from the two types of R and should therefore be represented in these terms.
a durative time contains a set of temporal points, it is possible for such an E to include the R = S point. Therefore, the "R, S ⊂ E" interpretation obtains in (22b). By contrast, in (23b), the event of breaking is taken as instantaneous. Since the time of the event is not durative, the inclusive relation "R, S ⊂ E" is not possible. Therefore, in (23b) the "R, S < E" interpretation obtains instead.

Crucially, no matter whether '<' or '≤', a relation designated by -ru connects S and R/E when the subject is marked with wa and R/S and E when the subject is marked with ga.

4.4. Teiru

In Section 2, we have further observed that a -teiru form is also interpreted distinctively, depending on whether it is used in a sentence whose subject is marked with wa or ga. The examples are repeated in (24) below.

   'John is writing a book.'

S ⊂ R, E

b. John-ga hon-o kai-tei-ru. book-Acc write-Prog-Pres
   'John is writing a book.'

R, S ⊂ E

Although both (24a) and (24b) roughly mean that John is writing a book, (24a) conveys that John has been engaged in a continuing activity of writing a book, which does not necessarily mean that John is actually writing a book when the sentence is uttered, while (24b) conveys that the event of John's writing a book is actually taking place and being in progress at the time of utterance.

If we assume that -teiru conveys the relation 'c', (24a) and (24b) are explained as a case in which the relation 'c' connects S and R/E and a case in which it connects R/S and E respectively. When the relation 'c' connects S and R/E, i.e., "S ⊂ R, E", E includes S and yet is remote from S. This gives rise to the interpretation of (24a) that the event of writing a book described in the sentence takes place over a loosely defined present time which includes the moment of speech but not necessarily at the moment of speech.

On the other hand, when the relation 'c' connects R/S and E, i.e., "R, S ⊂ E", S is immediately included in E. This yields the interpretation of (24b) that the event of writing a book described in the sentence takes place over a duration of time which includes the moment of speech and actually progressing at the moment of speech.

As we expected, the relation 'c' designated by -teiru connects S and R/E, when the subject is marked with wa, and R/S and E when the subject is marked with ga.

4.5. Summary

On the assumption that morphemes, -ta, -ru, and -teiru, carry relational meanings, '>', '<', and 'c', I have shown that they specify the temporal relation between S and R/E when the subject is marked with wa and that between R/S and E when the subject is marked with ga, as summarized in (25) below. Accordingly, wa/ga-minimal pairs of sentences are given distinct temporal and aspeclual interpretations.

(25) Subject marking and temporal relations

<table>
<thead>
<tr>
<th>Wa</th>
<th>R &gt; E (past)</th>
<th>S &gt; R, E (present)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ga</td>
<td>R &lt; E (inchoative)</td>
<td>S &lt; R, E (future)</td>
</tr>
</tbody>
</table>

The interpretive difference derives from whether R coincides with E and not with S or coincides with S and not with E. (Apart from this difference, tense morphemes essentially specify the temporal relation between S and E.) With the former type of R, a relational meaning designated by a tense morpheme temporally locates a whole event in remote relation to S. With the latter type of R, a relational meaning designated by a tense morpheme temporally locates a cross-section of an event in immediate relation to S.

5. Tense Morphemes and Their Aspeclual Meanings

In the previous section, we have worked with the assumption that morphemes, -ta, -ru, and -teiru, carry relational meanings, '>', '<', and 'c', which can connect either S and R/E or R/S and E, or in fact S and E in either case. In this section, I turn to the aspeclual meaning of these morphemes and show that they can also be considered to denote aspeclual meanings, completion, inchoative and ongoing, which can modify two different types of event.

When the subject is marked with ga, the truth of a clause is dependent on the utterance time t. In this case, the event described in the clause is a cross-section intersecting at t and not as being immediate to the present moment. On the other hand, when the subject is marked with wa, the truth of a clause is dependent on another time t'. In this case, the event described in the clause is somewhat remote from the present moment and seen as a whole. Therefore, an aspeclual meaning modifies a cross-section of an immediate event when the subject is marked with wa and a remote event as a whole when the subject is marked with wa.
The morpheme -ts, which has been considered to carry the relation '>', can also be considered to denote completed aspect. When it occurs in a clause whose subject is marked with tsa, as in (21a) above (repeated in (26a) below), completed aspect denoted by -ts modifies an event as a whole which is remote from the present moment. A remote event as a whole modified by completed aspect is interpreted as a past event having been completed at some remote time in the past. Thus, completed aspect modifying a remote event as a whole yields a past tense reading.

On the other hand, in a sentence whose subject is marked with go, eg, (21b) above (repeated in (26b) below), completed aspect denoted by -ts modifies a cross-section of the event intersecting at the present moment. A cross-section of an immediate event modified by completed aspect is interpreted as having just been completed in the immediate past and therefore directly relevant to the present moment. This yields the present perfect interpretation.

(26) a. John-wa ki-ta.  'John came.'
    John come-Past

b. John-ga ki-ta.  'John has just arrived.'
    John come-Past

Similarly, the morpheme -ru can be considered to denote inchoative aspect when it designates the relation '<'. In a sentence whose subject is marked with ws, eg, (22a) above (repeated in (27a) below), inchoative aspect modifies a remote event as a whole. A remote event as a whole modified by inchoative aspect is interpreted as going to take place at some remote time in the future. Thus, inchoative aspect modifying a remote event as a whole yields a future tense reading. In a sentence whose subject is marked with ga, eg, (22b) above (repeated in (27b) below), inchoative aspect modifies a cross-section of the event intersecting at the present moment. A cross-section of an immediate event modified by inchoative aspect yields an urgent interpretation that it is going to take place immediately.

(27) a. John-wa ku-ru.  'John will come.'
    John come-Pres

b. Huuseen-ga ware-ru.  'A/ The balloon is going to break.'
    balloon break-Pres

When the relation '<' is designated by -ru or -teiru,24 they denote ongoing aspect. In a sentence whose subject is marked with ws, eg, (23a) and (24a) above (repeated in (28a) and (29a) below), ongoing aspect denoted by them modifies a remote event as a whole. A remote event as a whole modified by ongoing aspect is interpreted as continuing throughout in space and/or time but not necessarily actually occurring at the present moment. This results in the generic, habitual, or continuous interpretation.25 In a sentence whose subject is marked with go, eg, (23b) and (24b) above (repeated in (28b) and (29b) below), ongoing aspect denoted by -ru or -teiru modifies a cross-section of the event intersecting at the present moment. A cross-section of an immediate event modified by ongoing aspect is interpreted as actually going on and progressing at the present moment. This results in the present progressive interpretation.

(28) a. Huuseen-wa ware-ru.  'A balloon breaks.'
    balloon break-Pres

b. John-wa hon-o kai-tei-ru.  'John is writing a book.'
    book Acc write-Prog-Pres

(29) a. John-ga ku-ru.  'John is coming.'
    John come-Pres

b. John-ga hon-o kai-tei-ru.  'John is writing a book.'
    book Acc write-Prog-Pres

Thus, those morphemes which have been considered to carry relational meanings to specify temporal relations in Section 4 can also be considered to denote aspectual meanings, which modify either an event as a whole remote from the present moment or a cross-section of an immediate event. A certain relational meaning corresponds to a certain aspectual meaning, as summarized in (30) below. While a relational meaning and an aspectual meaning may be distinguished as tense and aspect, they are in fact two different sides of one thing. On this basis, we can view those morphemes such as -ts, -ru, and -teiru as tense/aspect morphemes, which carry inseparable tense/aspect meanings.26

(30) Denotations of morphemes, -ts, -ru, and -teiru

<table>
<thead>
<tr>
<th>relational meaning</th>
<th>aspectual meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ts</td>
<td>completed</td>
</tr>
<tr>
<td>ru</td>
<td>inchoative</td>
</tr>
<tr>
<td>ru/teiru</td>
<td>ongoing</td>
</tr>
</tbody>
</table>

Crucially, a single tense/aspect meaning denoted by a single tense/aspect morpheme can yield two distinct temporal and aspectual interpretations, due to

24 See footnote 23 above.

25 Note that I distinguish 'continuous' from 'progressive', despite the fact that they are usually used synonymously. The term continuous suggests concepts throughout in space and/or time, whereas the term progressive suggests a cumulative or step-by-step advancement. (24a) (repeated in (28a)) is an example of the continuous interpretation, while (24b) (repeated in (28b)) is an example of progressive interpretation.

26 This analysis of tense and aspect as a single system of morphologically inseparable tense/aspect suggests that tense and aspect should be merged syntactically in the phrase structure of tense/aspect as well.
two different types of event, caused by two types of evaluation time. Which one of the two possible interpretations obtains perfectly correlates to whether the subject of the clause is marked with wa or ga.

6. Conclusion

In this paper, I have shown that wa- and ga-marking of the subject perfectly correlate to two types of evaluation time, which distinguish two types of event and give rise to two distinct temporal and aspectual interpretations of clauses.

This suggests that subject marking in Japanese is clearly related to tense/aspect in the syntax. Particularly, it points out the need to encode the distinction between the two types of evaluation time in our syntactic representation of the tense/aspect system, in order for us to see the syntactic mechanisms to account for the interrelation between tense/aspect and wa/ga-marking of the subject. I shall pursue this line of investigation elsewhere.

References


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