Māori personal marking and type-e nouns

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Theoretical Linguistics at Keio (TaLK): March 2, 2022

1 The Māori personal article

Māori:

- Head-initial DP language with a rich set of articles
- Requires overt determiners to the left of NPs in many syntactic environments (cf. Bauer 1993: 110 ff.).

<table>
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<th>definite</th>
<th>strong</th>
<th>personal</th>
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Māori pre-nominal articles

The personal article *a*:

- Appears in three major environments, always to the left of referential NPs.¹,²

1. Personal pronouns: following prepositions *i, ki, kei, hei*

   (1) *Ka kite au i a ia.*

   VBL see I DO PERS him

   “I saw him.” [Bauer 1993: 109, ex. 452]

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¹Since different authors gloss the Māori examples differently, I’ve changed the morpheme-by-morpheme glosses from the source material to be consistent across examples where applicable, using in each case a gloss that is as uncontroversial as possible given the descriptive literature. I refer the reader to the cited material to see the exact glossing of the original examples. I have also standardized the Māori spelling where applicable, writing long vowels always with macrons rather than double letters, and making the spellings of names the same across examples. All offered Māori examples and their paraphrases are the same as in the cited material, except that I have always written ‘Hōne’ for the Māori counterpart of ‘John.’

²Key to the Māori glosses: CAUS = causative; DO = direct object preposition; EQU = equative; EXCL = exclusive; FOC = focus marker; GEN = genitive; LOC = locative; NEG = negation; PASS = passive; PERS = personal article; PRED = predicate marker; PRS = present; PROG = progressive; PST = past; TNS = subordinate / relative tense marker; VRB = verbal clause marker.
2. Personal names: following prepositions i, ki, kei, hei; in neutral subject position

(2) Kei.te pātai ia ki a Rewi, “He aha tēnei?”
prs.prog ask he to pers Rewi pred what this
“He is asking Rewi, ‘What is this?’” [Bauer 1993: 271-272, ex. 1084]

(3) Kei waenga rīwai a Hata.
at.prS middle potato pers Hata
“Hata is in the midst of the potatoes.” [Bauer 1993: 332, ex. 1475]

3. Place names and ‘local nouns’: in neutral subject position

(4) A Te.Kao kei tērū taha o Kaitāia.
pers Te-Kao at.prS that side Gen Kaitaia
“Te Kao is beyond Kaitaia.” [Bauer 1993: 329, ex. 1459a]

(5) He whero a roto.
pred red pers inside
“The inside is red.” [Bauer 1993: 109, ex. 451]

• Appears in some minor environments, apparently semantically unrelated:
  – Question words in Māori also take articles...
  – They are split among the morphological NP classes in the language: while aha ‘what’ is (morphologically) a common noun, wai ‘who’ is a personal name, and hea ‘where’ and nahea ‘when’ are local nouns.
  – Therefore, these wh-words inherit the environments in which a appears from these classes (cf. Harlow 2001: §7.2.3.1).

(6) I riri a Hata i a wai?
pst angry pers Hata caus pers who
“Who made Hata angry?” [Bauer 1993: 11, ex. 43b]

• Elsewhere, these referential NPs are zero-marked (no overt article to the left):

(7) Kei.te kimi whare hōu rātou.
prs.prog seek house new they
“They are looking for a new house.” [Harlow 2007: 149]

(8) Ka whakahokia atu e mātou te kākahu o Hōne.
vbl return.PASS away by us.excl the garment gen Hōne
“We’ll give Hōne back his coat.” [Bauer 1993: 476, ex. 2142]

(9) Haere tonu, ka tae ki Āniwaniwa.
move still vbl arrive to Aniwaniwa
“[She] went on and reached Aniwaniwa.” [Bauer 1993: 467, ex. 2103]

(10) Kei.te kai te kūrī i raro i te tūru.
prs.prog eat the dog at below at the stool
“The dog is eating under the stool.” [Bauer 1993: 323, ex.. 1419]
The appearance of a versus ∅ with these NPs:

- Morphosyntactically, not semantically, conditioned: always predictable from syntactic environment, never from semantics.

(11) * Ka pupuhi a Hata i te poaka. 
    VRB shoot PERS Hata DO the pig 
    “Hata shot the pig.” [Bauer 1982: 307, ex. 2] 

(12) * Ka pūhia te poaka e Hata. 
    VRB shoot.PASS the pig by Hata 
    “The pig was shot by Hata.” [Bauer 1982: 307, ex. 3] 

(13) * Ko Hata ka pupuhi i te poaka. 
    FOC Hata VRB shoot DO the pig 
    “It was Hata who shot the pig.” [Bauer 1982: 308, ex. 2a] 

- Zero-marking remains distinctive: those expressions that elsewhere take a can be zero-marked with definite interpretations in environments where other NPs require overt articles (e.g. te).

- Personal marking forms a distinct category in Māori, surfacing as ∅ or a depending on (i) morphological class of the noun; (ii) syntactic configuration.

- Distribution is largely complementary with other articles: (i) ‘common nouns’ never take a; (ii) pro-., proper, and local nouns typically don’t take e.g. te ‘the,’ he ‘a’ in their referential uses.³

**The question:**

- What is the semantic contribution of personal marking in Māori?

**The (preliminary) proposal:**

- Personal marking requires that an NP be **rigidly denoting**, referring to an individual invariably on the world of evaluation

- Māori referential expressions occupy NP; so we treat NPs as type-e, and distinguish among rigid and non-rigid nouns, which articles track

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³Some Māori names permanently incorporate the shape of the definite article Te, which always appears in referential uses with that name. However, this is part of the noun, as articles are then taken to the left of it, e.g. in a Te Kao in (4), where Te Kao is the name. In Māori writing, this incorporated definite is capitalized to distinguish it from the genuine definite article. A morphological restriction prevents stacking the ‘true’ definite article with this one, hence *Te Te Kao...
2 Some possible treatments

2.1 Morphophonological variant of the definite article

The personal article is a ‘normal’ definite article:

- Undergoes an obligatory morphophonological operation in the presence of [+proper] nouns, yielding a null spell-out, or a spell-out as a (cf. Matushansky 2006).
- Presumably surfaces elsewhere as te in Māori

Two things you can’t say:

- The personal article is just a definite that f-selects for [+proper] nouns, or agrees with a [+proper] feature.

```
\( \text{D} \triangleleft \text{NP} \Rightarrow \text{Ponga} \)
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- The article is just the result of (N-to-D) head movement (cf. Embick & Noyer 2001).

```
\( \text{D} \triangleleft \text{NP} \Rightarrow \text{Ponga} \)
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The problem:

- **restrictive modification** voids personal marking, requiring e.g. normal definite marking instead.
- None of the above mechanisms (or their morphophonological effects) should be interrupted by adjunction or restrictive modification.
- E.g., with Māori relative clauses modifying names:

```
(14) Ko te Hōne e kōrero nei, kāhore e roa.
FOC the Hōne TNS talk LOC NEG TNS tall
“The Hōne I’m talking about isn’t tall.” [Bauer 1993: 360, ex. 1628]
```
(15) *Ko Höne kei te haere mai ki te noho, ko te matāmua.
   FOC Höne PRS.PROG move to-here to the stay EQU the eldest
   “Höne that is coming to stay is the eldest.”
   “Höne, who is coming to stay, is the eldest.” [Bauer 1993: 50-51, ex. 214]

(16) Ka hoki te hōrero ki a Hotu i ruku rā i te punga o tōrāua
   VBL return the story to PERS Hotu PST dive for DO the anchor GEN their canoe
   “The story returns to Hotu, who had dived for the anchor of their canoe.”
   [Bauer 1993: 51, ex. 215]

• This is not a quirk of Māori: other languages with personal marking on names, e.g. Icelandic and Catalan, have this replaced by ‘normal’ definite marking in these environments:

(17) el Pau que vam conèixer a la festa
   the Paul that go.1.PL meet at the party
   “the Paul that we met at the party”
   [Catalan. Matushansky 2008: 608, ex. 100]

(18) þú ert fyrsta María-n sem ég kynnist.
   you are first.DEF Maria-the who I get-to-know
   “You are the first Maria I get to know.” [Icelandic. Sigurðsson 2006: 226]

Matushansky’s (2006) solution:

$$\text{DP} \Rightarrow \text{DP}$$

$$\text{D} \quad \text{NP}$$

$$\text{N}$$

$$\text{D} \quad \text{N}$$

$$\text{N}$$

• The article changes to its personal form via m-merger, which is morphophonological, and requires strict adjacency between heads (no intervening specifiers or adjuncts)

• In many languages, m-merger between the article and noun triggers obligatorily in the presence of [+proper], which either (i) makes the article null, or (ii) spells it out in a special ‘proprial’ form

• Modifiers cannot intervene between the determiner and noun without stopping m-merger, so inserting modification makes the default definite marking appear instead\footnote{Fara (2015: 93 & fn. 40) claims that Matushansky’s generalization is not correct, since personal marking is also blocked by modifiers that do not linearly intervene between the determiner and noun. But if I read Matushansky right, she does not have a lack of linear intervention in mind, but just a strict head-head configuration without any intervening layers of structure. Thus, an adjunct to the noun should block m-merger as she defines it, because it introduces an intermediate layer of structure. In any case, Fara’s own proposal is one that requires a special ad hoc adjacency condition, that requires the determiner to be sister to the noun.}
A basic distributional problem:

- Cross-linguistically, it’s just not true that personal-marked and ‘normally’ definite-marked DPs are in complementary distribution in these environments, as this account predicts (cf. Jeshion 2015).
- E.g., *John* and *the John* not only both exist, but mean different things!

And the (larger) semantic problem:

- Personal-marked DPs just aren’t like definite descriptions! The semantics is wrong!
- Personal-marked DPs (i) have distinct rigidity behavior in intensional environments from ‘normal’ definite-marked DPs; (ii) they have distinct potential for covarying readings beneath quantifiers; (iii) they license anaphora to the noun differently, etc. (cf. Gray 2017; Schoubye 2018).
- There likely is a morphological [+proper] class in Māori, and many languages (cf. the notes on *wh*-words in Māori above; Ghomeshi & Massam 2009), but this is not sufficient to explain personal marking, which has a semantically unique contribution.

Similar problems arise for any other account, e.g. Matushansky (2018), trying to make personal marking just a special realization of ‘normal’ definiteness.

### 2.2 Type-driven identity function

*a* functionally marks type-*e* NPs:

- It denotes an identity function on individuals
- Where composition is successful, no non-trivial contribution

\[(a)^{w.g} = \lambda x.e.x\]

With the personal name *Ponga*, or the third-person singular pronoun *ia*:

\[(20)\]

\[\begin{array}{ll}
\text{a. } & [\text{Ponga}]^{w.g} = p \\
\text{b. } & [a \text{ Ponga}]^{w.g} = [a]^{w.g}([\text{Ponga}]^{w.g}) = p \\
\end{array}\]

\[(21)\]

\[\begin{array}{ll}
\text{a. } & [\text{ia}]^{w.g} = g(i) \\
\text{b. } & [a \text{ ia}]^{w.g} = [a]^{w.g}([\text{ia}]^{w.g}) = g(i) \\
\end{array}\]

Type-driven distribution:

- No composition with common nouns of type \langle e, t \rangle, e.g. *whare* ‘house’
- Results in type mismatch
Elegant, but:

- Requires type-heterogeneous NP category in Māori: some are \( e \), some \( \langle e, t \rangle \)
- Names aren’t exclusively ‘referential’ (type-\( e \)-looking) in Māori (cf. Sloat 1969; Matushansky 2008; Fara 2015, a.m.o.):

\[
\text{(22)} \quad \text{Koinā te Hōne i kōrero nā au.} \\
\text{that-is the Hōne PST speak LOC I} \\
\text{“That’s the Hōne I was talking about.” [Harlow 2007: 111]} \\
\text{ ~~ “That’s the individual named Hōne I was talking about.”}
\]

\[
\text{(23)} \quad \text{He koretake tāku Hōne.} \\
\text{PREd useless my Hōne} \\
\text{“My Hōne is useless.” [Bauer 1993: 360, ex. 1629]} \\
\text{ ~~ “My individual named Hōne is useless.”}
\]

- Must names be type-heterogeneous too, depending on the determiner? (cf. Schoubye 2017, a.m.o.)
- No evidence in any language that property-like names are derived from referential ones: must appeal to unattested morphological operations or \textit{ad hoc} substantive type shifts (cf. Gray 2017).

2.3 Rigidifier of predicates

Muñoz (2019): Māori \( a \) (and other ‘proprial’ marking) as rigidifier:

- Composes with predicates, yields an individual that bears the property encoded by the predicate at the world of the context (cf. Muñoz 2019: 15, ex. 26).\(^5\)

\[
(24) \quad [a]^{w_c,w,g} = \lambda P_s,et,x[P(w_c)(x)]
\]

The idea:

- Names are type-\( \langle e, t \rangle \) in the lexicon, denoting the property of bearing the name;

\(^5\)This denotation is a large simplification: I refer the reader to the original article for details, which makes use of a variable semantics for referential name DPs, and spells out a semantics of name-bearing properties (like ‘being a John’) in terms of variables and assignment functions, which in turn is crucial for why the article can only compose with predicates that denote name-bearing properties. For the reasons noted in this section, I’m now doubtful this treatment can work.
• Referential names are composed via the personal article, to rigidly refer to the (unique[ly relevant]) individual in the context having the property, i.e. bearing the name.

Thus with the name Ponga, yielding the DP \(a\) Ponga:

(25) \(\text{[Ponga]}^{w_0,w,g} = \lambda x. x \text{ is named Ponga in } w\)
(26) \(\text{[a Ponga]}^{w_0,w,g} = [a]^{w_0,w,g}(\text{[Ponga]}^{w_c,w,g})\)
\(= \lambda x \text{[x is named Ponga in } w_c]\)
\(= \text{the unique[ly relevant] individual in the world of the context named Ponga}\)

Problems:

• Requires a semantic explanation for why \(a\) does not occur with common nouns, e.g. *a whare *‘House,’ or with restrictively modified names.
  
  – Such an explanation causes problems with ‘quasi-names’ like Mom, which can be rigid or non-rigid...

• Requires treating Māori pronouns as predicates to be rigidified!

The issue:

• There is something right about \(a\) (and similar articles) being markers of rigidity

• But rather than rigidifiers, they seem to be **markers of a pre-existent rigidity** on the noun

3 The account

3.1 Type-\(e\) nouns

Lasersohn (2021):

• All nouns are type-\(e\): common nouns are given indices, and interpreted as property-restricted, non-rigid variables.

• Simplifying, and letting there be a domain \(\mathcal{D}_v\) of nominal indices (non-zero natural numbers):

(27) **Assignments**
An assignment \(g\) is a function from pairs of worlds and indices to (type-\(e\)) individuals.

(28) **Indexation**
Each occurrence of a noun is indexed by an index \(i \in \mathcal{D}_v\).

(29) **Interpretation of indices**
For any noun \(\alpha\):
\(\text{[}\alpha_i\text{]}^{w,g} = g(w, i)\)
Variables formed by indexing common nouns are restricted by lexical postulates governing assignments:

\[(30)\] If \(i\) is indexed to \textit{whare}, then for all \(w, g\): \(g(w, i)\) is a house in \(w\).

A noun like \textit{whare} ‘house,’ indexed with \(i\), ends up with a denotation as follows:

\[(31)\] \([\text{whare}]^{w,g} = g(w, i)\), where \(g(w, i)\) is a house in \(w\)

Treating all nouns as type-\(e\) variable expressions is appealing for Māori, because:

- Canonical type-\(e\) expressions in Māori, like names and pronouns, occupy the NP position, taking articles as determiners
- Predicative uses of nouns in Māori require overt predicate marking, suggesting that nominal predicates are derived:

\[(32)\] \(\textit{He mahita ia.}\)

\textsc{pred teacher he}

“He is a teacher.” [Bauer 1993: 78, ex. 314]

Articles:

- \textit{te} composes with the nominal variable, and places a definiteness requirement on it:

\[(33)\] \([\text{te}]^{w,g} = \lambda x_{se}: \text{def}(x)(w).x\]

- For instance, a naïve Strawsonian definite (cf. Lasersohn 2021: 384, ex. 3), yielding \textit{te whare} ‘the house:\textsuperscript{6}

\[(34)\] \textit{def}(x)(w) \text{iff for all } g, g': x(g)(w) = x(g')(w)
\[(35)\] \([\text{te whare}]^{w,g} = [\text{te}]^{w,g}([\text{whare}]^{w,g})
= : \forall g', g''[g'(w, i) = g''(w, i)].g(w, i), \text{where } g(w, i) \text{ is a house in } w
= lx[\text{house'}(x)(w)]

Predicates:

- The predicate marker \textit{he} converts the variable into the corresponding property:

\[(36)\] \([\text{he}]^{w,g} = \lambda x_{se}.\lambda y_{te}.\exists g[y = x(w, g)]\)

\textsuperscript{6}I adapt the colon-period notation from Heim & Kratzer (1998) to note not only domain restrictions on partial functions, but also presuppositional requirements on non-function objects, in particular of objects of types \(e\) and \(t\). Thus, for a type-\(e\) expression, ‘: \(\phi.x\)’ denotes what ‘\(x\)’ denotes if \(\phi\) is true, and is undefined if \(\phi\) is false. For a type-\(t\) expression, ‘: \(\phi.\psi\)’ is true if \(\phi\) and \(\psi\) are true, false if \(\phi\) is true and \(\psi\) false, and undefined if \(\phi\) is false. I commit to no particular compositional implementation or theory of undefinedness.
• Composing with the noun makes it suitable for predication, e.g. *he whare* `is a house:'

\[
\begin{align*}
\text{[he whare]} & = [\text{he}]^{w,g}([\text{whare}]^{w,g}) \\
& = \lambda y_e \exists g[y = g(w, i)], \text{where } g(w, i) \text{ is a house in } w \\
& = \lambda y_e. \text{house}'(y)(w)
\end{align*}
\]

We expand to allow for nouns that introduce rigid variables, and treat *a* as a **marker of rigidity**.

### 3.2 Adding rigid variables and *a*

Some modifications:

- \([\alpha]^{w_c, w, g}\) is the extension of *\alpha* at *w_c* (the world of the context), *w* (the world of evaluation), and *g* (the assignment)

- The intension of *\alpha* at *w_c* is \(\lambda(w, g).[\alpha]^{w_c, w, g}\)

(38) **Non-rigid and rigid variables**

Let \(D_v\), the set of indices, be the union of the disjoint sets \(V_i\) and \(V_j\).

- We call \(V_i\) the set of **non-rigid** indices.

- We call \(V_j\) the set of **rigid** indices.

(39) **Indexation II**

- If *k* is indexed to *\alpha*, then:

  - If *\alpha* is a common noun, then *k* \(\in V_i\);

  - If *\alpha* is a pronoun or trace, then *k* \(\in V_j\).

(40) **Interpretation of indices II**

- If *i* \(\in V_i\), then \([\alpha_i]^{w_c, w, g} = g(w, i)\)

- If *j* \(\in V_j\), then \([\alpha_j]^{w_c, w, g} = g(w_c, j)\)

Pronouns introduce restricted variables, but interpreted at the world of the context, e.g. with *au* `I / me`:

(41) If *j* is indexed to *au*, then for all \(w, g\): \(g(w, j)\) is the author in \(w\)

(42) \([\text{au}_j]^{w_c, w, g} = g(w_c, j)\), where \(g(w_c, j)\) is the author in \(w_c\)

The personal article *a* **marks the NP as rigid**: it composes with a variable, and places a presupposition of rigidity on it:

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7Lasersohn does not provide a corresponding entry for a predicate marker, but he alludes to its necessity in Lasersohn (2021: 386, fn. 26). I assume that (36) is more or less what is required.

8The treatment of Māori pronouns here is of course a simplification, in that it ignores the restriction of pronouns to persons, and does not compose the restrictions on the variable from a combination of person, number, and clusivity features.
The denotation of the Māori personal article

\[ a_{w_c,w,g} = \lambda x : \text{rigid}(x).x \]

...where we define rigidity in terms of world-invariance, adjusting the classical spirit of Kripke (1980) to our grammar:

\[ \text{rigid}(x) \text{ iff for all } w, w', g: x(w, g) = x(w', g) \]

3.3 How it works

3.3.1 a can appear with pronouns, which are always rigid

Pronouns always introduce indices \( j \in V_j \). So with a DP like \( a \ ia \), a third-person singular referential pronoun, the presupposition is met:

\[ a_{w_c, w, g} = g(w_c, j) \]

\[ a_{w_c, w, g} = \lambda x : \text{rigid}(x).x \]

\[ a_{w_c, w, g} = a_{w_c, w, g} (\lambda(w, g).g(w_c, j)) \]

\[ =: \text{rigid}(\lambda(w, g).g(w_c, j))g(w_c, j) \]

\[ = g(w_c, j) \]

The intension of the variable is rigid, since it is sensitive to \( w_c \) and not to \( w \), so that:

\[ \text{For all } w, w', g: [\lambda(w, g).g(w_c, j)](w, g) = [\lambda(w, g).g(w_c, j)](w', g) \]

\[ = g(w_c, j) \]

And so the pronoun simply refers to whichever individual the variable assignment maps \( j \) to at \( w_c \), the world of the context.

3.3.2 a cannot appear with common nouns, which are never rigid

Common nouns always introduce indices \( i \in V_i \). So with a DP like *a whare *:'House,’ composition fails because the presupposition isn’t met:

\[ [\text{whare}_i]_{w_c, w, g} = g(w, i), \text{ where } g(w, i) \text{ is a house in } w \]

\[ [a]_{w_c, w, g} = \lambda x : \text{rigid}(x).x \]

\[ [a \text{ whare}_i]_{w_c, w, g} = [a]_{w_c, w, g} (\lambda(w, g).g(w_c, j)) \]

\[ =: \text{rigid}(\lambda(w, g).g(w_c, j))g(w, i) \]

\[ = \text{undefined} \]

The lexical content of whare requires it to be interpreted as a world-dependent variable. Thus:

\[ ^9\text{There is likely an exception here in many languages for so-called ‘quasi-names,’ which like proper names seem to be able to introduce rigid or non-rigid variables freely, despite not having a name-bearing semantics. English examples include Mom, Dad, Teacher, etc. I am not aware of any examples in Māori, but they may very well exist.} \]
It is not the case that:
For all \( w, w', g \):
\[
\lambda \langle w, g \rangle . g(w, i)(w, g) = \lambda \langle w, g \rangle . g(w, i)(w', g),
\]
since there is a \( w, w', g \) such that \( g(w, i) \neq g(w', i) \), viz. where these are distinct individuals, each a house in \( w \) and \( w' \), respectively.

And so as with all nouns introduced with an index \( i \in V_i \), the personal article cannot compose.

### 3.3.3  a can appear with names, but only rigidly interpreted

Now for names:

- **There is no restriction on the kind of indices names can introduce.** They can be read rigidly or non-rigidly.
- Like with all nouns, the resulting variables are restricted by properties.¹⁰

(53) If \( k \) is indexed to Ponga, then for all \( w, g : g(w, i) \) is named Ponga in \( w \).

(54) \( [\text{Ponga}_i]^{w, w, g} = g(w, i) \), where \( g(w, i) \) is named Ponga in \( w \)

(55) \( [\text{Ponga}_j]^{w, w, g} = g(w, j) \), where \( g(w, j) \) is named Ponga in \( w_c \)

If they’re rigid, they compose with the personal article like pronouns:

(56) \( [\text{Ponga}_j]^{w, w, g} = g(w, j) \), where \( g(w, j) \) is named Ponga in \( w_c \)

(57) \( [a]^{w, w, g} = \lambda x : \text{rigid}(x).x \)

(58) \begin{align*}
[a \text{ Ponga}_j]^{w, w, g} &= [a]^{w, w, g}(\lambda(w, g).[\text{Ponga}_j]^{w, w, g}) \\
&= \text{rigid}(\lambda(w, g).g(w, j)).g(w, j) \\
&= g(w, j), \text{ where } g(w, j) \text{ is named Ponga in } w_c
\end{align*}

Where they are non-rigid, composition isn’t possible (for reasons parallel to Section 3.3.2).

Modification:

- **a** cannot occur with restrictively modified names, since **modification introduces world-sensitivity** to the variable.

- So restrictively modified names (e.g. with relative clauses) must appear with other articles, like \( te: *a \text{ Hône i kôrero nā au } *\text{Hône} \) that I was talking about.¹¹

(59) \( [i \text{ kôrero nāu au}]^{w, w, g} = \lambda x : \text{talk.about}'(w)(x(w, g)).x(w, g) \)

(60) \( [\text{Hône}, i \text{ kôrero nā u}]^{w, w, g} =: \text{talk.about}'(w)(g(w, j)).g(w, j), \text{ where } g(w, j) \text{ is named Hône in } w_c \)

¹⁰ I don’t take a view of the nature name-bearing properties here. There are two approaches to them of which I’m aware, in Geurts (1997) and my own in Muñoz (2019). See also Gray (2018), for discussion of the treatment of name-bearing properties as response-dependent.

¹¹ Here I take modification to introduce presuppositional restrictions on variables. Lasersohn (2021: §6) instead allows assignments to be compositionally defined. This is likely preferable, but I simplify here.
• Hōne i kōrero nā au ‘Hōne that I was talking about’ is a non-rigid variable:

\[(61) \text{There is a } w, w', g \text{ such that:} \]
\[
\begin{align*}
\lambda\langle w, g \rangle : \text{talk.about}'(w) & \cdot g(w, j) \cdot g(w_c, j)\rangle(w, g) \\
\lambda\langle w, g \rangle : \text{talk.about}'(w) & \cdot g(w, j) \cdot g(w_c, j)\rangle(w', g),
\end{align*}
\]

viz. where at \( w \), the author in \( w_c \) talked about \( g(w_c, j) \), but not at \( w' \).
(Then, the first is \( g(w_c, j) \), and the latter is undefined).

And so composition with \( a \) fails:

\[(62) \text{J}_{a \text{ Hōne}\ i \ kōrero nā au} = \text{rigid}(\lambda\langle w, g \rangle \cdot \text{talk.about}'(w) \cdot g(w, j)) \cdot g(w_c, j),
\]

where \( g(w_c, j) \) is named Hōne in \( w_c \)

= undefined

• But composition with another article with no rigidity requirement, like \( te \), succeeds using a non-rigid name:

\[(63) \text{J}_{te \text{ Hōne}\ i \ kōrero nā au} = \text{def}(\lambda\langle w, g \rangle \cdot \text{talk.about}'(w) \cdot g(w, i)) \cdot g(w, i),
\]

where \( g(w, i) \) is named Hōne in \( w \)

= the unique\(ly\) relevant individual in \( w \) named Hōne that the speaker was talking about

3.3.4 \( a \) with local nouns

For simple cases:

• The treatment of e.g. \( a \text{ roto} ‘the inside’ (or ‘Inside’) as in (5) is unproblematic, taking it to rigidly refer to an inside (of something):

\[(64) \text{If } k \text{ is indexed to } \alpha \text{ and } \alpha \text{ is a local noun, then } k \in \mathcal{V}_j.\]

\[(65) \text{If } j \text{ is indexed to } \text{raro}, \text{ then for all } w, g : g(w, j) \text{ is the inside of something in } w\]

\[(66) \text{J}_{\text{roto}} = g(w_c, j), \text{ where } g(w_c, j) \text{ is the inside of something in } w_c\]

But what about for complex cases, like \( \text{raro i te tūru ‘under the stool,’ in (10)?}\)

• If \( \text{raro} \) is a relational noun, or takes a modifying PP, this would be a problem for rigid reference, since \( \text{raro i te tūru} \) would introduce the non-rigid variable \( tūru ‘stool,’ \) making the variable as a whole non-rigid, and unsuitable for personal marking.

• But Māori complex locatives are not marked using genitives, or any obvious marker of modification: rather, what we see in the whole phrase is a series of PPs that may just be parallel adjuncts to the verb,
• That is, the compositional structure of *i raro i te tūru* (lit.: ‘at bottom at the stool’) in relation to the verb is not like this:

```
  kai
   • 'eat'
      i
       • 'at'
         raro
           • 'bottom'
            i te tūru
             • 'at the stool'
```

But rather like this:

```
  kai
   • 'eat'
      i raro
        • 'at bottom'
            i te tūru
             • 'at the stool'
```

• If this is so, then *i raro* ‘at bottom’ and *i te tūru* ‘at the stool’ are equally modifiers to the verb, and so *raro* itself remains unmodified. Glossed into quasi-English with bracketing, what (10) means is not (67), but rather (68).

(67) The dog is [eating [at bottom [of the stool]]].
(68) The dog is [eating [at bottom] [at the stool]].

• Then indeed, *raro* can remain unmodified, and so rigid, and receive personal marking.

Some notes:

• This depends on the prevalence of PP-adjuncts in Māori as verbal modifiers as opposed to nominal modifiers

• There may also be subtle semantic distinctions between a hierarchical and flat complex locative phrase

• This might be part of an explanation of why local nouns are so unique in Māori (marked like names): they refer rigidly with flat PP structures, not using relation or modification
3.4 Other articles, like *te, as requiring non-rigidity?

Non-personal articles, like definite *te, are typically not compatible with pronouns, names used rigidly, or local nouns: *te au *‘the me,’ *te Ponga *‘the Ponga’ (read rigidly), *te raro *‘the bottom.’

And so it may be that articles in general are sensitive to differences in rigidity, and e.g. *te encodes a presupposition of non-rigidity:12

\[
[t\vDash t]_{w,g} = \lambda x : def(x)(w) \land nonrigid(x).x
\]

Where we characterize non-rigidity as the counterpart of rigidity:

\[
\text{nonrigid}(x) \iff \text{for some } w, w', g: x(w, g) \neq x(w', g)
\]

4 Some curious predictions...

- ‘Regular’ definite marking should be possible with pronouns, if they can be modified, to introduce non-rigidity:

- This should only be possible if the property of being the author is rigid, but the property introduced by modification is not:

\[
\text{the funny me} \not\Rightarrow \text{the funny speaker} \\
\leadsto \text{the funny individual identical to the speaker}
\]

- Modified names should have two interpretations, one where the naming property is rigid, and one where it isn’t:

\[
\text{the funny John} \\
\leadsto \text{the funny individual named John} \\
\leadsto \text{the funny individual identical to John}
\]

5 Ya se acaba

What we’re left with:

- A type-unified treatments of NPs in Māori, as type-ε

---

12This predicts that *te should occur with unmodified names, so long as they’re read non-rigidly, yielding things like *te Ponga ‘the Ponga.’ I don’t know if this is so in Māori, but it is apparently the case with similar definites elsewhere: phrases like the John really do exist, and they must be read non-rigidly, and have different semantic behavior from referential expressions like John (cf. Jeshion 2015). This is one of the key pieces of data that accounts like those in Section 2.1 struggle to address. I therefore welcome this prediction cross-linguistically, with the caveat that if it isn’t borne out in Māori, some provision must be made.
• The distinction between rigid and non-rigid NPs is tracked by (the lack of) personal marking
• Semantic explanation for why restrictive modification disrupts personal marking
• No special stipulation needed for names
• May explain why names in general exhibit a ‘dual behavior’ that other nouns do not when modified, why modification affects e.g. pronouns vs. common nouns differently
• May explain why Māori uses parallel adjuncts for local nouns, not modifiers or genitives

In the future:
• Reaching the end of what can be done without field research in Māori
• Parallel to languages without as robust ‘personal’ marking, e.g. zero-marking of rigid names in other languages with article systems
• Cross-linguistically: is there variation, e.g. as to whether pronouns are NP vs. DP, and whether local nouns are rigid vs. non-rigid?

References


