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Two sketches of modality in Nez Perce

A study in semantics for mixed audiences

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Abstract

What is the best way to communicate the results of a fieldwork-based project in formal semantics to the language community hosting the fieldwork? I present a pair of sketches of semantic facts related to modality in Nez Perce: a non-technical sketch addressed to the language community, and a formal sketch addressed to linguists. This pairing is intended to stimulate discussion about ways in which formal semanticists can present results of fieldwork-based projects to communities who understand the need for semantic inquiry in a rather different way.

1 Introduction

Linguistic fieldworkers are increasingly being called on to produce documentation and non-technical description for the benefit of endangered language communities. Researchers working in theoretical linguistics must pair this task with the construction of technical work addressed to other linguists specialized in a particular area, subfield or theory. This ideally means that two distinct types of descriptions are to be produced for each topic to be investigated by the formal linguist fieldworker, corresponding to two distinct groups of “end users” for research results.¹

The goal of this paper is to start a discussion about how best to move between these two types of language description for questions of natural language meaning. Fieldwork-based formal semantics is an area which has grown markedly in recent years, and with important recent publications devoted to its methodology² and various of its results.³ Questions of how the results of fieldwork-based semantics are best presented deserve sustained attention, given that formal semanticists undertaking field research frequently address themselves to two audiences who understand the basic task of semantics in different ways. For language teachers and students (and many linguists working outside

¹ For discussion of this point, see Kadanya (2005) and Mithun (2005).

² Matthewson 2004, Bar-el 2007

³ To mention just a sampling, concentrating on languages of the Americas: Matthewson 2001, Bohmeyer 2002, Faller 2002, Bar-el 2005, Bittner 2005, Tonhauser 2006, Rullmann et al. 2008, Wilhelm 2008, papers in Matthewson 2008, Cable 2010, Murray 2010

formal semantics), semantic description means the production of translations and non-technical descriptions of conditions of appropriate use. For formal semanticists, semantic description generally means the construction of formal fragments under the ægis of a theory of linguistic meaning. Semanticists are for the most part trained to tailor research reports only to this second audience. Given differences in approach to the basic task, how are semanticists to make their results accessible to the first audience – language communities – in a useful and non-technical way?

There are currently very few models for how the results of formal semantic fieldwork can be made accessible to language communities. Unlike phonological, morphological and syntactic aspects of grammar, systematic discussion of semantic facts is often entirely absent from published grammars. Semantic topics are typically treated in pedagogical materials only insofar as translations are offered and morphemes are labelled ('past tense', 'benefactive', etc.). Such initial steps, while often helpful, nevertheless leave open many important questions that face language learners and community members interested in a traditional language.

What follows here is offered as a concrete starting point for discussion on how to improve this state of affairs. The sketch that follows presents the results of a two-year investigation into the meanings of modal expressions in Nez Perce (Niimiipuutímt), a language indigenous to the Columbia River Plateau (Idaho, Washington, Oregon, USA). The generalizations I report were obtained from field research with four of the approximately 30 native speakers of this language, all elders of the tribe. This field research centered around techniques for formal semantic fieldwork presented and justified in Matthewson (2004). Speakers were asked to judge the felicity of constructed Nez Perce sentences in various contexts, described in English or depicted graphically; they were also asked to translate between Nez Perce and English, given background contexts presented in similar ways. Special note was taken of speakers' spontaneous utterances and translations, as well as their remarks on the contexts offered or sentences produced and judged. A larger collection of data points collected in this way is presented in Deal (2011), in support of the generalizations presented here.

This sketch is non-traditional in that it consists of two redundant pieces, written for distinct audiences, presented together as a pair. The non-technical sketch which is my primary focus here appears in section 2. This is followed by a technical sketch of approximately the same length in section 3. This joint presentation has two goals. First and foremost, it is presented with the hope of encouraging discussion about the best non-technical ways present the details of the phenomenon being investigated. To what degree is it necessary to teach basic ideas of formal semantics (e.g., functions, entailment) and syntax (e.g., constituency) in order to convey research results in an accurate way? Second, the joint presentation here is intended to allow semanticists to assess the degree to which the same information is being presented to the two audiences. In the non-technical sketch, I have tried to stick as closely as possible to pre-theoretic ideas about meaning – rather than, say, prefacing an introduction to formal semantics to the sketch. To what degree has this choice shaped the way the details of the Nez Perce modal system can be presented to

a non-technical audience?

One more word of introduction concludes my preface to these sketches. The technical sketch appearing here has the modest aim of describing a set of facts related to Nez Perce modals in a precise way. Because my focus here is on semantics for “mixed audiences”, so to speak, I have reserved for another venue (Deal 2011) a more in-depth discussion of certain theoretical implications, consequences and choices that come out of the formal proposal here – matters of special interest primarily to theoreticians *qua* theoreticians.

2 Non-technical sketch: *Talking about possibilities in Niimiipuutimt*

This section is a non-technical guide to the meaning of Nez Perce words that have to do with possibility. I will focus on the meaning and proper usage of the words and parts of words that are in bold in sentences (1)-(5).

- (1) **Picpic** ha'aco'qa.
The cat could go in. / The cat can go in.
- (2) **Pay's** picpic ha'aco'.
The cat could go in. / Maybe the cat will go in.
- (3) **Paalwit** picpic ha'aco'.
The cat could go in. / Maybe the cat will go in.
- (4) **Ku' weet** picpic ha'aco'.
The cat could go in. / Maybe the cat will go in.
- (5) **'Eete** picpic ha'aco'.
I guess the cat will go in.

Looking at the translations of these sentences, we see that Nez Perce provides several different ways of saying what comes out as *The cat could go in* in English. Even though these sentences are translated the same way, they don't convey exactly the same idea. In certain conversations, one of these sentences would be appropriate and others would not.

To explain the differences between these ways of speaking, I will begin by comparing them. First I will compare the meanings of sentences with the ending *-o'qa* and sentences with the word *pay's* (section 2.1). Then I will compare sentences with *pay's* and sentences with *paalwit*, *ku' weet* and *'eete* (section 2.2). At this point I will return to issues which mostly concern the *-o'qa* ending. These are issues about time (section 2.3) and about saying *have to*, *need to*, *must* and *should* (section 2.4).

2.1 *-o'qa* and *pay's*

Both *-o'qa* and *pay's* are very common in conversation in Nez Perce. What is the difference between them? How do you decide which to use in speaking?

There is a simple difference between the scenarios where *-o'qa* is used and where *pay's* is used. This difference has to do with two reasons for talking about possibilities. One

reason we talk about possible things is that sometimes *we don't know* what is actually going on. For instance, if you say this:

- (6) It's possible that it's raining outside.

you are probably in a situation where you just don't know what the weather is like outside. Maybe you are in a basement, or in a room without windows. If you knew what the weather was, you would not say it this way; you would just say *It's raining*, or *It's sunny*, or so on.

When we are talking about possibilities of this kind in Nez Perce – when we are saying that something is possible *given what we know* – we don't use *-o'qa*; we use *pay's*. When I say this sentence:

- (7) **Pay's** picpic ha'aco'.
The cat could go in. / Maybe the cat will go in.

I am suggesting that I don't know what exactly the cat will do. A clearer but less natural translation would go like this: *Given what I know, it's possible the cat will go inside*. If we change the sentence a little bit, we have a sentence to say if we are not sure what the cat has already done:

- (8) **Pay's** picpic ha'aca.
Maybe the cat went in.

By saying this, I am suggesting that I don't know whether the cat stayed outside or went inside. I don't have enough information to say what the cat actually did.

Another reason to talk about possibilities doesn't have to do with not having enough information. For instance, if you say one of these sentences:

- (9) It's possible to drive 75 mph in Montana.
(10) It's possible for children to hurt themselves with this toy.
(11) It's possible for you to reach that berry.

you are *not* suggesting that you don't know how fast people actually drive, or that you aren't informed as to whether children actually hurt themselves with this toy, or that you just can't tell whether the person you are talking to will reach the berry. You are talking about possibilities in connection with rules or laws (such as speed limits), or in connection with the risks and potentials of particular things, or in connection with the abilities of people. You say sentence (9) to tell someone what the law allows in Montana. You say sentence (10) to inform people of the risky design of the toy. You say sentence (11) to reassure the person you are talking with about their ability to reach a berry.

When we are talking about possibilities of this kind in Nez Perce – where we are saying that something is possible *given what the rules are*, or *given the way that things are designed*, or *given the abilities that people have* – we don't use *pay's*; we use *-o'qa*. When I say this sentence:

- (12) Picpic ha'aco'qa.
The cat could go in. / The cat can go in. / The cat may go in.

I am saying either that *the rules allow* the cat to go in, or that the cat *has the ability* to make it inside. These are things I could say whether or not I know what the cat will do next.

To summarize:

- Use *pay's* when you making a guess, or when you don't know how things really happened (or will happen).
- Use *-o'qa* when you are talking about what's allowed by rules or laws, or what people or things are capable of doing.

I will explain a little more about the meaning of *-o'qa*-words in a few pages. Before I do that, I want to explain a bit about *paalwit*, *ku' weet* and *'eete*.

2.2 *pay's*, *paalwit*, *ku' weet* and *'eete*

Pay's is not the only word to use for guessing-type possibility sentences in Nez Perce. Speakers also use *paalwit*, *ku' weet* and *'eete* in these types of scenarios. Some of these words convey slightly different ideas.

Pay's and *paalwit* are used in very similar situations – situations where we are talking about what is possible given what we know, or situations of guessing. If you hear a knock at the door and you think it's Scotty knocking, you could use either *pay's* or *paalwit*, like this:

- (13) *Pay's hiiwes Scotty.*
Maybe it's Scotty. / That could be Scotty.

- (14) *Paalwit hiiwes Scotty.*
Perhaps it's Scotty. / That could be Scotty.

English 'maybe' and 'perhaps' are good translations for *pay's* and *paalwit*, because they too suggest a situation of guessing – talking about possibilities because we don't know the facts.

In this scenario, however, if you used *'eete* or *ku' weet*, you would be saying something slightly different. When you choose *ku' weet*, you are not exactly making a guess so much as declaring that you don't know whether it's Scotty who knocked.

- (15) *Ku' weet hiiwes Scotty.*
I don't know if it's Scotty.

You can even use *ku'nu* 'I don't know' here, like this:

- (16) *Ku'nu weet hiiwes Scotty.*
I don't know if it's Scotty.

Both this version and the version with plain *ku'* let me declare that I don't know whether it's Scotty who's outside.

If I choose *'eete*, my sentence says something different in another way. Now I am saying that I *infer* that Scotty is knocking. There are different ways that I could reach this conclusion. It could be because somebody told me that Scotty would arrive about now. It could be because I am peeking outside, and based on what little I see, I am coming to this conclusion. And I could be more or less sure that my conclusion is correct. When I am quite sure, I am more likely to translate *'eete* using the English word 'must'. When I am less sure, I am more likely to translate *'eete* using 'I guess'.

- (17) 'Eete hiiwes Scotty.
I guess it's Scotty. / It must be Scotty.

Unlike English 'must' and 'I guess', the meaning of *'eete* doesn't say anything about how sure I am. It just says that the idea behind this sentence is something I have come up with by inference.

To summarize:

- *pay's*, *paalwit*, *ku' weet* and *'eete* are all used when we are talking about what is possible because we don't know the facts.
- *pay's* and *paalwit* are used to express guesses – 'Maybe ...'
- *ku' weet* is used to declare ignorance about something – 'I don't know whether ...'
- *'eete* is used where a sentence conveys an idea that the speaker has come up with via inference. This can be an inference that the speaker is fairly sure about, or one that he or she is less sure about.

2.3 Possible when?

The possibility words we have just been talking about – *pay's*, *paalwit*, *ku' weet* and *'eete* – all appear at the beginning of sentences. They don't interfere with the verb endings that tell us whether an event happened in the past, is happening right now, or will happen in the future. So we can come up with groups of sentences like this:

- (18) 'Eete hiweqe.
I guess it rained.
- (19) 'Eete hiweqise.
I guess it's raining.
- (20) 'Eete hiweqiyu'.
I guess it's going to rain.

In each of these sentences, I am making a statement about the weather based on an inference – this part is flagged by *'eete*. In the first sentence, I am concluding that it rained in the past; in the second sentence, my conclusion concerns the present; in the third sentence, my conclusion concerns the future. These differences are encoded in the endings *-e*, *-se* and *-yu'*.

Sentences with *-o'qa* are different. The ending *-o'qa* replaces the endings that would normally tell us about time. For this reason, it is not always clear what time we have in mind for an *-o'qa* sentence. This means that the *-o'qa* ending can be used very flexibly. Many speakers of Nez Perce allow *-o'qa* sentences to describe possibilities that hold at any time. For these speakers, our *-o'qa* sentence below can be translated in several more ways:

- (21) Picpic ha'aco'qa.
The cat could go in. / The cat could have gone in. / The cat could be going in right now (given the rules, or given its abilities).

In English, we use 'It could go in' to talk about the future, 'It could have gone in' to talk about the past and 'It could be going in' to talk about the present. Many Nez Perce speakers use *-o'qa* sentences like (21) for all of these purposes. For a few speakers, however, *-o'qa* sentences are not used to talk about the past. These speakers would not use our sentence (21) to translate 'The cat could have gone in'.

If you want to make clear what time you have in mind for an *-o'qa* sentence, you can use a time expression like *watiisx* 'yesterday/tomorrow' or *kii kaa* 'right now', like this:

- (22) Picpic ha'aco'qa kii kaa.
The cat can go in right now. The cat could be going in right now (given the rules, or given its abilities).
- (23) Picpic ha'aco'qa watiisx.
The cat could go in tomorrow. / The cat could have gone in yesterday.

The time you are interested in is also sometimes made clear by your conversation. For instance, if you say:

- (24) Weet'u 'aayatom hinaashisna.
The lady didn't win.
Met'u hinaashisno'qa.
But she could have won.

It is clear that you are using the *-o'qa* sentence to talk about something that was possible for the lady in the past. If she had played in a different way, she could have won the game!

To summarize:

- In a sentence with *pay's*, *paalwit*, *ku' weet* and *'eete*, an ending on the verb tells us whether we are talking about the past, present, or future.
- In a sentence with the *-o'qa* ending, there is no special ending telling us about time. An *-o'qa* sentence can be used to talk about possibilities in the past, present or future by most speakers. (However, some speakers only use *-o'qa* sentences to talk about possibilities for the present and the future, not the past.)

2.4 Saying have to, need to, must and should

This last section concerns the use of *-o'qa* to express the ideas conveyed by English sentences using *have to*, *need to*, *must* and *should*.

You can use the *-o'qa* ending in certain circumstances where you would use *have to*, *need to*, *must* or *should* in English. Suppose you bring your dog along when you visit someone, and that person says to you:

(25) Ciq'aamqal 'eemtii hiwc'aayo'qa.

The dog may stay outside. / The dog should stay outside.

To explain what this Nez Perce sentence means, let's think for a moment about the meanings of the two translations into English. In English, if your host said 'The dog should stay outside', that means the house rules *require* the dog to stay out: it would be against the rules for the dog to come inside. If your host said 'The dog may stay outside', it means that the house rules *allow* the dog to stay out: it wouldn't be against the rules for the dog to stay outside. You assume that if the rules require the dog to stay outside, your host will say so. If your host just says that the rules allow the dog to stay outside, that's because the rules don't say anything stronger. So you can clarify these sentences of English like this:

The dog may stay outside.

Clarification: It is permitted but not required for the dog to stay outside.

The dog should stay outside.

Clarification: It is required for the dog to stay outside.

Now, what exactly are you to understand when you hear our Nez Perce sentence (25)? Just like before, the *-o'qa* sentence means that something is *possible in view of the rules* – in other words, permitted. Your host is communicating to you that the rules allow the dog to stay outside. But there is a little difference between Nez Perce sentence (25) and the English sentence 'The dog may stay outside'. When your host says 'The dog may stay outside' in English, you conclude that it's *not required* for the dog to stay out. (If it was, your host would have said 'The dog should stay outside' or 'The dog has to stay outside' instead.) When you hear Nez Perce (25), you don't draw this conclusion. Your host is

telling you that it's allowed for the dog to stay outside, and *leaving open* whether or not it's required.

Because *-o'qa* sentences only leave it open whether or not something is required, sometimes you will need to be more clear. There are several ways that speakers clarify what they mean. To clarify that the dog *will* stay outside, you can choose a sentence with the future ending *u'* (which is sometimes pronounced *-yu'*, *-o'*, *-yo'*, *-nu'* or *-no'*), like this:

- (26) 'Eemtii hiw'ceeyu'.
It will stay outside.

If you are addressing the dog that needs to stay outside, you can use a command, like this:

- (27) 'Eemtii wicey!
Stay outside!

You can also rephrase your sentence, so that instead of saying that the dog must stay out, you are saying that it can't go in. That would go like this:

- (28) Ciq'aamqal weet'u ha'ato'qa.
The dog can't go in.

These three ways of speaking all make it fairly clear that the dog *must* stay out – it *can't* come in.

In some types of sentences, you cannot use *-o'qa* to communicate the idea of *should*, *must*, *have to* and *need to*. You must explain in a different way. Sentences that behave this way all have one thing in common: it doesn't make sense to leave open whether something is necessary once we've said it's possible. Let me explain further what this means by discussing an example. If someone says this sentence to you:

- (29) Weet'u ciq'aamqal 'eemtii hiwc'ayo'qa.
The dog can't stay outside.

They are telling you that it is not permitted for the dog to stay outside. Saying that something is not permitted tells us *already tells us* that it is also not required. It doesn't leave that question open. This means that you have to be careful not to use sentences like (29) if all you want to say is that the dog doesn't have to stay outside. This sentence can't be used for a scenario where the dog can go inside or stay outside as it pleases. It only means that the dog is not permitted to stay out.

Sentences with negation *weet'u* behave this way in general: they mean that something is *not possible* or *not allowed* or that someone is *not able* to perform a task. You can't use these sentences to say that something isn't required, isn't mandatory, or doesn't *need* to happen.

Another type of sentence that behaves this way is an 'if ... then' (*c'alawi ... kaa*) sentence. Here there is an interesting restriction. When you put an *-o'qa* word in the 'if' (*c'alawi*) part of the sentence, you can only use your *-o'qa* word to express the idea of

can, could, or may – never should, must, have to or need to. In this sentence, the *-o'qa* word *kiyo'qa* means 'I can go':

- (30) C'alawí kiyo'qa, kaa kiyu'.
If I can go, then I will go.

This sentence means that if I am permitted to go, then I will go. It follows from that that if I am required to go, then I will go. (I'm not leaving open what would happen if I were required to go – what I say already makes clear what would happen in that case.) I can't use this sentence to say just 'If I have to go, then I will go'. I would have to explain that in a different way.

Now suppose I change the sentence so the *-o'qa* word is in the 'then' (*kaa*) part of the *if...then*. Consider a different sentence, like this:

- (31) C'alawí hiweqiyu', kaa kiyo'qa.
If it rains, then I can go. / If it rains, then I should go.

My new sentence means that I am permitted to go if it rains, and leaves open whether or not I am required to go in that case. For that reason, I can use it both when I would use 'If it rains, then I can go' in English, and when I would use 'If it rains, then I should go' in English.

A third type of sentence behaves this way, too. This is a sentence that makes an 'every' claim or a 'whatever/whoever' claim – a statement concerning everyone, everything, everytime something happens, and so on.

- (32) Ke 'isii hikiyo'qa, hikiyu'.
Everyone who can go, will go. / Whoever can go, will go.
- (33) Kem 'ituune 'aapo'qa, 'iin 'epu'.
Everything you can eat, I will eat. / Whatever you can eat, I will eat.

Just like 'if...then' (*c'alawi...kaa*) sentences, these sentences have two parts that behave in two different ways. The first part starts with *ke* and then some words that narrow down the people, things, times or places we're interested in – *ke 'isii hikiyo'qa* 'everyone who can go', *kem 'ituune 'aapo'qa* 'everything you can eat'. An *-o'qa* word in this part cannot be used to say *should, must, have to or need to*. Once again, if you say that everyone who can go will go, you are already saying that everyone who has to go will go. You aren't leaving that open. If all you want to say is that everyone who has to go will go, you would have to explain what you mean in a different way.

Again, the second part of the sentence lets you use the *-o'qa* ending more flexibly. If you say this:

- (34) Ke 'isii hikuye watiisx, hikiyo'qa halxpaawit.
Everyone who went yesterday can go on Sunday. / Everyone who went yesterday should go on Sunday.

You are literally saying that everyone who went yesterday *can* or *could* go on Sunday, and you are leaving open whether or not they should. If you mean that they should go on Sunday, you could say this *-o'qa* sentence; but to be especially clear that something is required to happen, you should consider using a command sentence instead.

To summarize:

- A simple *-o'qa* sentence says that something is possible, and leaves open whether or not it's necessary.
- To make it clear that something is truly necessary (not just possible), speakers use future sentences, commands, and paraphrases using different verbs.
- An *-o'qa* sentence with negation *weet'u* means that something is *not possible*, *not allowed*, or that someone is *not able*. It doesn't mean *not required*, *not necessary* or that someone *doesn't need* to do something.
- An *-o'qa* word in the 'if' (*c'alawi*) part of an 'if ... then' only means *possible*, *allowed*, *permitted* – *may*, *can*, *could*. In the 'then' (*kaa*) part, on the other hand, it can be used flexibly (it leaves open whether or not something is necessary).
- An *-o'qa* word in the 'every' part of an 'every' / 'who/what/when/where-ever' only means *possible*, *allowed*, *permitted* – *may*, *can*, *could*. In the rest of the sentence, it can be used flexibly (it leaves open whether or not something is necessary).

3 Technical sketch

The goal of this sketch is to describe in a precise way the semantics of five Nez Perce modal expressions described informally in the previous section– particles *pay's*, *paalwit*, *'eete* and *ku' weet*, and verbal suffix *-o'qa*.

3.1 Modal domain restrictions

Following a broad consensus, I treat modal expressions as quantifiers over possible worlds, subject to domain restrictions which are provided by context but constrained by particular modals' lexical entries. The Nez Perce modal system is characterized by systematic lexical restriction of this type. Modals *pay's*, *paalwit*, *'eete* and *ku' weet* permit only epistemic restrictions. Modal *o'qa* permits only non-epistemic restrictions.

This basic division in the modal system can be shown in the following way. Epistemic modals show an effect that Yalcin (2007) calls *epistemic contradiction*. Yalcin observes that sentences of the form $mod(\phi) \ \& \ \phi$ and $mod(\phi) \ \& \ \neg\phi$ are strikingly unacceptable when *mod*

is an epistemic modal.⁴ The Nez Perce epistemic expressions *pay's*, *paalwit*, *'eete* and *ku' weet* show this effect of epistemic contradiction:

- (35) # *pay's* / *paalwit* / *'eete* / *ku' weet* *ha-'ac-o'* *kaa*
 maybe / perhaps / INFER / DUNNO Y.N 3SUBJ-enter-PROSP and
ha-'ac-o'.
 3SUBJ-enter-PROSP
 Maybe / perhaps / I guess / dunno whether it (the cat) will go in, and it will go in.
- (36) # *pay's* / *paalwit* / *'eete* / *ku' weet* *ha-'ac-o'* *met'u*
 maybe / perhaps / INFER / DUNNO Y.N 3SUBJ-enter-PROSP but
weet'u ha-'ac-o'.
 not 3SUBJ-enter-PROSP
 Maybe / perhaps / I guess / dunno whether it (the cat) will go in, but it won't go in.

Speakers soundly reject such sentences as nonsense. Speakers are not able to interpret *pay's*, *paalwit*, *'eete* or *ku' weet* in a non-epistemic way; there is no way to avoid epistemic contradiction. They accept, however, conjunctions of the form *-o'qa* (ϕ) & ϕ and *-o'qa* (ϕ) & $\neg\phi$:

- (37) a. *picpic ha-'ac-o'qa* *met'u weet'u ha-'ac-o'*.
 cat 3SUBJ-enter-MODAL but not 3SUBJ-enter-PROSP
 Consultant: "The cat could go in, but it won't go in."
- b. *ha-'ac-o'* *kaa ha-'ac-o'qa*
 3SUBJ-enter-PROSP and 3SUBJ-enter-MODAL
 It will go in and it can go in.
 Consultant: "It will go in. It's apt to enter."

These facts establish that *o'qa* does not require an epistemic interpretation. Is such a reading possible? Judgments systematically point to *no*: in contexts favoring epistemic claims, speakers correct modal sentences with *-o'qa* to versions including epistemic expressions.

(38) Context: someone asks me:

Weet picpic-nim paa-himkasayq-sa-0 *ciq'aamqal-nim hipt*
 Y.N cat-ERG 3/3-like.taste-IMPERF-PRES dog-GEN food
 Does the cat like dog food?

Since I don't have a dog around the house, I don't know the answer to the question. I reply:

⁴ This is of course reminiscent of *Moore's paradox*, which crops up with expressions of belief:

- (i) # It's raining and I believe that it's raining.
 (ii) # It's raining and I don't believe that it's raining.

- a. # paa-himkasayq-o'qa
 3/3-like.taste-MODAL
 Intended: She could_{epistemic} like it.
 Consultant: "You don't know that for a fact."
- b. ku'nu weet paa-himkasayq-o'qa
 DUNNO Y.N 3/3-like.taste-MODAL
 I don't know if she would like it.
- (39) Context: you see the foundation of a house in the grass.
- a. # hi-pe-tewyenik-o'qa
 3SUBJ-S.PL-live-MODAL
 Intended: People could_{epistemic} have lived here.
- b. 'eete waqiipa kine 'iniit hi-week-0-e
 INFER long.ago here house 3SUBJ-be-P-REM.PAST
 A long time ago there must have been a house here.

These examples show that *-o'qa* (unlike English *could*) cannot be used as an epistemic possibility modal. The expression of epistemic possibility requires an epistemic expression – *ku'nu weet* in (38), *'eete* in (39).

I conclude that all five Nez Perce modals impose requirements on their contextual restriction. For *pay's*, *paalwit*, *'eete* and *ku' weet*, the restriction must be epistemic; for *-o'qa*, it cannot be.

3.2 Epistemic expressions

There are four epistemic expressions to be treated here: *pay's*, *paalwit*, *'eete* and *ku' weet*. The first two of these, *pay's* and *paalwit*, function semantically like epistemic possibility modals of the English type. (These examples come from Deal (2011).)

- (40) 'itu-wecet yoχ pit'iin' hi-neki-se-0
 what-reason that girl 3SUBJ-think-IMPERF-PRES

ciq'aamqal 'e-wuy-n-e
 dog 3GEN-run.away-P-REM.PAST

Why does the girl think her dog ran away?

- a. pay's he-eyeex-n-e
 maybe 3SUBJ-be.hungry-P-REM.PAST
 Maybe it was hungry
- b. pay's picpic-ne pee-twe'-ke'y-k-0-e
 maybe cat-OBJ 3/3-follow-go-SF-P-REM.PAST
 Maybe it chased a cat
- (41) Context: a homeowner is conversing with workmen who are painting his house.
 The owner asks:

mawa pa-hiinaq'i-yo'
 when S.PL-finish-PROSP
 When will you be done?
 weet pa-hiinaq'i-yo' kii taqc?
 Y.N S.PL-finish-PROSP this today?
 Will you finish today?

A painter replies:

ku'-x mawa, paalwit pa-hiinaq'i-yo' watiisx.
 DUNNO-1SG when perhaps S.PL-finish-PROSP tomorrow
 Dunno when, perhaps we will finish tomorrow.

Following Kratzer (1981), let us suppose that modal domain restrictions come in the form of conversational backgrounds – functions from a world to a set of propositions describing various types of facts holding at that world.⁵ An epistemic conversational background can be understood as follows:

- (42) A function $f \in D_{\langle s, \langle st, t \rangle \rangle}$ is an epistemic conversational background iff for any world w , $f(w)$ is the set of propositions describing what is known in w .

As is the case with English possibility modals used epistemically, it is hard to discern any difference in semantic contribution between the two epistemic modals *pay's* and *paalwit*. The following proposal thus collapses the two.

- (43) $\llbracket \text{pay's} \rrbracket^{c,w}$ and $\llbracket \text{paalwit} \rrbracket^{c,w}$ are only defined if c provides an epistemic conversational background f .
 If defined, $\llbracket \text{pay's} \rrbracket^{c,w} = \llbracket \text{paalwit} \rrbracket^{c,w} = \lambda p \exists w' [w' \in \cap f(w) \ \& \ p(w')]$

Here the requirement of an epistemic conversational background is handled via a presupposition, following Rullmann et al. (2008).

Epistemic conversational backgrounds also play a role in the semantics of a third expression, *ku'(nu) weet*. Of the five modals, this is the only one that is clearly bimorphemic: *ku'(nu)* is a prefix for speaker ignorance, and *weet* is the polar question particle:

- (44) a. 'isii
 who / anyone (NPI)
 b. ku'-isii
 DUNNO-who
 someone (I don't know who)
- (45) a. hi-weqi-se- \emptyset
 3SUBJ-rain-IMPERF-PRES
 It is raining.

⁵ In what follows, I will stick to a simplified version of Kratzer-style modal semantics which eschews orderings among possible worlds – a second function to which conversational backgrounds can be put.

- b. weet hi-weqi-se-0?
 Y.N 3SUBJ-rain-IMPERF-PRES
 Is it raining?

Speakers use *ku'(nu) weet* to express their ignorance on certain points or to make clear that, in their view, certain questions remain open. The following examples are from Deal (2011).

- (46) Context: It is June of 2008. Hillary Clinton and Barack Obama are locked in a drawn-out primary contest.

ku'nu weet pee-his-nu' Clinton-ne Obama-nim.
 DUNNO Y.N 3/3-win.over-PROSP Clinton-OBJ Obama-ERG
 Obama might or might not win out over Clinton.

- (47) Context: My consultant tells me that her cat was hit by a car in the road. I ask when. She replies:

kii kayak'in. ku' weet halxpaawit-pa.
 this week DUNNO Y.N Monday-LOC
 This week. Maybe Monday. / I don't know whether it was Monday.

Glossing over the internal complexity of *ku'(nu) weet*, this ignorance component can be treated in the following way:

- (48) $\llbracket ku' weet \rrbracket^{c,w}$ is only defined if c provides an epistemic conversational background f .
 If defined, $\llbracket ku' weet \rrbracket^{c,w} = \lambda p \exists w', w'' [w', w'' \in \cap f(w) \ \& \ p(w') \ \& \ \neg p(w'')]$

This is the proposal that *ku' weet ϕ* requires there to be epistemically accessible ϕ -worlds and epistemically accessible $\neg\phi$ -worlds. Neither ϕ nor its negation is entailed by what is known.

The fourth epistemic expression, *'eete*, differs from the others in imposing what appears to be an evidential condition. It is used only for possibility in view of inference from evidence. This evidence can come in various forms, as the examples below show (further examples appear in Deal 2011). In a first case, the evidence is an obscured visual image; given this evidence, it is inferrable that Scotty is at the door.

- (49) Context: you are looking through a keyhole.

'eete hii-we-s-0 Scotty.
 INFER 3SUBJ-be-P-PRES Scotty
 I guess it's Scotty.

A colleague does not answer her phone. This is evidence as to her whereabouts: she is no longer at her desk. It takes an inference to conclude that she has gone home.

- (50) Context: It is late in the day. The speaker has just called a colleague and gotten her answering machine.

waaqo' 'eete hi-ckilii-n-0
 now INFER 3SUBJ-go.home-P-PRES
 I guess she has gone home now. / She must have gone home now.

The translations of these sentences involves either the evidential expression *I guess*, or evidential *must*.⁶ For a first pass, let us treat 'eete as a possibility modal, differing from *pay's* and *paalwit* only in the conversational background it requires. (I will return to the issue of how necessity-like translations, as we find in (50), can be accounted for.)

- (51) A function $f \in D_{\langle s, \langle st, t \rangle \rangle}$ is an inferential conversational background iff for any world w , $f(w)$ is the set of propositions describing the evidence relevant to inference-generation in w .
- (52) $\llbracket 'eete \rrbracket^{c,w}$ is only defined if c provides an inferential conversational background f .
 If defined, $\llbracket 'eete \rrbracket^{c,w} = \lambda p \exists w' [w' \in \cap f(w) \ \& \ p(w')]$

This type of modal analysis of an evidential expression, while not uncontroversial,⁷ is adopted here for its simplicity, and for its similarity with the treatment of *pay's* and *paalwit*.

3.3 Non-epistemic -o'qa

The *-o'qa* modal suffix is used for the expression of possibility of three types: deontic, pure circumstantial, and counterfactual. The examples below represent these various uses. In a deontic example, a mother uses an *-o'qa*-sentence to give permission to a child, informing him what is possible in light of her rules.

- (53) tepelweku's-ne 'a-p-o'qa hip-naaq'i-t-pa.
 candy-OBJ 3OBJ-eat-MODAL eat-finish-PART1-LOC
 You can eat candy after the meal.

In a pure circumstantial example, *-o'qa* is used to describe the possibility, given facts about you, your yard, and roses, of roses growing in your yard. (This is a version of Kratzer (1981)'s hydrangeas example.)

- (54) Context: You want to plant some flowers in your yard where there aren't any flowers. Roses could grow there; the soil is good.
- teminik-o'qa taamsas kona
 plant-MODAL rose there
- kaa hi-pe-p'im-no'qa.
 and 3SUBJ-S.PL-grow-MODAL

⁶ On the evidential nature of *must*, see von Fintel and Gillies (to appear).

⁷ See Faller (2002), Chung (2007), Murray (2010) for alternative analyses of evidential expressions.

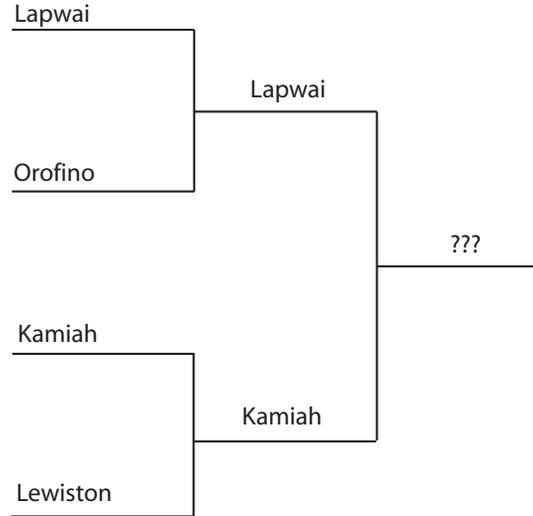


Figure 1: Tournament brackets

You could plant roses there and they could grow.

In a counterfactual example, *-o'qa* is used to describe the counterfactual possibility of Orofino winning the first game (which was actually won by Lapwai).

(55) Context: Tournament bracket picture, figure 1 (page 17)

'uuyit-pa hi-naas-his-**no'qa** lepwei-ne teweepu-m.
beginning-LOC 3SUBJ-O.PL-beat-MODAL Lapwai-OBJ Orofino-ERG
In the first (game), Orofino could have beaten Lapwai.

Supposing that these uses correspond to different conversational backgrounds, the *-o'qa* modal can be treated as follows:

(56) $\llbracket -o'qa \rrbracket^{c,w}$ is only defined if c provides a deontic, circumstantial or counterfactual conversational background f .

If defined, $\llbracket -o'qa \rrbracket^{c,w} = \lambda p \exists w' [w' \in \cap f(w) \ \& \ p(w')]$

Setting aside a range of interesting complications,⁸ we might for a first pass understand the conversational background types referenced here in the following way.

(57) A function $f \in D_{\langle s, \langle st, t \rangle \rangle}$ is an deontic conversational background iff for any world w , $f(w)$ is the set of propositions describing the relevant laws of w .

(58) A function $f \in D_{\langle s, \langle st, t \rangle \rangle}$ is an circumstantial conversational background iff for any world w , $f(w)$ is the set of propositions describing the relevant facts of w .

(59) A function $f \in D_{\langle s, \langle st, t \rangle \rangle}$ is an counterfactual conversational background iff for any world w , $f(w)$ is the set of propositions describing the relevant counterfactual suppositions made in w .

⁸ Stalnaker 1968, Lewis 1973, Arregui 2009, 2011, Kratzer To appear

3.4 Interaction with tense

The epistemic expressions *pay's*, *paalwit*, *'eete* and *ku' weet* occupy a clause-initial position which appears not to interact in any way with temporal or aspectual specifications. The non-epistemic expression *-o'qa*, on the other hand, is a verbal suffix which replaces aspect and tense marking. Temporal interpretation in *-o'qa* clauses is determined by the type of conversational background in use.

Deontic and circumstantial *-o'qa* sentences are strictly non-past-oriented. Consultants correct verbs with *-o'qa* presented as past circumstantial modal statements to verbs with past habitual aspect.

- (60) kunk'u picpic-nim pee-cepeqick-qa-na laqaas-na
 always cat-ERG 3/3-catch-HAB.PAST-REM.PAST mouse-OBJ
- kii kaa hii-we-s-0 tamawin tisqa'aw
 right.now 3SUBJ-be-P-PRES too fat

The cat used to be able to catch mice, but now she's too fat

They correct statements of past permission rendered with *-o'qa* to participial forms.

- (61) Prompt: Women didn't used to be allowed to vote.
- a. weet'u hi-w-sii-ne ha-'aayat mic'ii-t-pa
 not 3SUBJ-be-IMPERF.PL-REM.PAST PL-woman hear-PART1-LOC
 c'iiġn'es
 speak-PART2

"So that would be, they weren't allowed, weren't allowed to vote. The women weren't allowed to be heard, that would be, allowed to vote.

Without that *c'iiġn'es* that would be almost meaning the same, let's see, how would I say that?

- b. ha-'aayat weet'u hi-w-sii-ne mic'ii-t'as
 PL-woman not 3SUBJ-be-IMPERF.PL-REM.PAST hear-PART2

I guess that would be the sentence. *mic'ii-t'as* that would be heard or allowed to vote, their voice wasn't even counted. No matter what they thought, they were just supposed to keep mum. . . . That's changed."

Counterfactual uses of *-o'qa* prominently allow past orientation, as in (55), but future orientation is possible as well. The following future-oriented counterfactual comes from a myth text.

- (62) [From *Water Buffalo and the Deer Child*, Aoki and Walker 1989, 242] Water Buffalo Woman gives birth to a baby boy. She puts him in a cradleboard and she tells her brothers, who are baby-sitting, "Don't unlace him all the way—only down to the middle and not any further." Curious, the youngest brother unlaces the baby all the way down. The cradleboard flies open and they see that the baby is half deer.

The baby gets on its feet and turns into a full deer with spots. It runs away. The mother passes by, sees this, and cries, "I told you not to unlace him all the way! He was half deer and now he's turned completely into a deer.

'oo-qa ku'-wiyeewc'et mac-icim-k'ay' hiisemtuks
 3GEN.be-REC.PAST DUNNO-time how.much-only-in.addition month

kona kawannaâ hi-wak-o'qa nikeepkuyk-in'
 there at.last 3SUBJ-be-QA.PROSP unlace-PASSIVE

wilpwilp titooqan hi-wc'aa-yo'qa
 complete person 3SUBJ-become-QA.PROSP

After the right amount of time he would have been unlaced and he would have been completely human."

I will leave open here how this dependence between conversational background and temporal orientation is to be encoded in the grammar – whether it is to be written into the semantics of *-o'qa*, or whether it can be provided on independent grounds. Certainly, this interplay between modal flavor and temporal orientation forms an interesting contrast with the situation in English, where similar correlations have been discussed primarily in connection with modals that allow epistemic readings (e.g. Condoravdi 2001). For *-o'qa*, the choice of modal “flavors” concerns the difference between strictly counterfactual interpretations on one hand and a range of counterfactual, ability and deontic interpretations on the other.

3.5 On expressions of necessity

The set of modal expressions discussed thus far notably contains *only* expressions of possibility. For two of the modals, *-o'qa* and *'eete*, this treatment deserves special discussion, in view of the translations speakers provide. Example (50) shows that *'eete* is translated not only with *I guess*, suggestive of possibility, but also with *must*. Translations of *-o'qa* show similar flexibility. The following sentence is translated from Nez Perce into English by a consultant, who translates *-o'qa* with weak necessity modal *should*.

- (63) Context: a discussion of how young people speak quickly, making them hard to understand.

'i'yéwki hi-pa-c'iiâ-no'qa.
 slowly 3SUBJ-S.PL-speak-MODAL
 They should speak slowly.

For the following sentence and context, speakers accept both necessity and possibility translations into English.

- (64) Context: a friend is preparing for a camping trip. I am taking this person around my camping supplies and suggesting appropriate things. I hand them two blankets and say:

'inehne-**no'qa** 'ee kii lepit cickan
 take-MODAL you DEM two blanket

- a. You can take these two blankets.
- b. You should take these two blankets.

Concentrating on *-o'qa*, I propose in Deal (2011) that this flexibility in translation be handled by treating *-o'qa* as a possibility modal that does not carry a scalar implicature. Thus, given an appropriate conversational background f , ϕ -*-o'qa* is true at w iff there is a ϕ -world in $\cap f(w)$, even if indeed *all* worlds in $\cap f(w)$ are ϕ -worlds. In the latter case, an English possibility modal, which carries a scalar implicature, is not appropriate, and speakers opt for necessity modals in their translations.

Crucial to this analysis is a sensitivity to non-upward entailing contexts. In a non-upward entailing context, English possibility modals lack scalar implicatures, and thus become excellent translation equivalents for *-o'qa*. In the scope of negation, the restrictor of a universal quantifier, and the antecedent of a conditional, speakers do *not* translate *-o'qa* with necessity modals.

(65) Scope of negation

Weet'u mawa hi-pa-'yaa \hat{x} -**no'qa** 'inpeew'etuu-nm
 not when 3SUBJ-S.PL-find-MODAL police-ERG

- a. The police would never find me
- b. # It's possible_{deontic/circumstantial} that the police won't ever find me.

(66) Restriction of a universal quantifier

ke-m 'ituu 'iim kiy-**o'qa** 'iin waaqo' kuu- \emptyset -ye
 REL-2SG what you do-MODAL I already do-P-REM.PAST

- a. Whatever you can do, I already did.
- b. # Whatever you have to do, I already did.

(67) Antecedent of a conditional

c'alawi 'ac-**o'qa**, kaa 'aac-o'
 if enter-MODAL then enter-PROSP

- a. If I can go in, I will go in.
- b. # If I have to go in, I will go in.

In Deal (2011) I discuss extensively the types of expressions speakers use in order to translate simple necessity modals in non-upward-entailing contexts. For present purposes, suffice it to say that the typology of such paraphrases does not reveal the existence of a further simple modal expression which expresses the dual of *-o'qa*.

Can this analysis of translation flexibility in *-o'qa* be extended to *'eete*? Syntactic differences lead to complications in making the case. Unlike *-o'qa*, a verbal suffix which occupies the position of tense and aspect, *'eete* is a sentence-initial particle; *-o'qa*, but not *'eete*,

can be freely embedded. Attempts to position *'ete* in the scope of negation, the restrictor of a universal quantifier, and the antecedent of a conditional result not in a restricted range of translations, as for *-o'qa*, but in ungrammaticality. The argument for treating *'ete* as a possibility modal merely lacking a scalar implicature thus rests in essence on the basis of theoretical parsimony.

4 Discussion

These two sketches of Nez Perce modals attempt to present the same material to audiences understanding what it is to 'state the meaning' in markedly different ways. Let me conclude this study by underlining what I see as a central question for further work in the presentation of semantics for mixed audiences. To what degree is it necessary (and desirable) to convey research results by teaching formal linguistics?

The study of modal expressions provides an interesting testing ground for answers to this question, given that the key notions – possibilities, quantification, contextual restriction, and implicature – are by their nature quite abstract. I have attempted here to present these in informal ways, hewing as closely as possible to common (or at least reasonably natural) ideas about linguistic meaning and structure. I have dealt with possibilities and quantification purely by translation into English with modal expressions. I have dealt with contextual restriction by reference to the various reasons why one might make a modal statement. And I have dealt with the lack of scalar implicature associated with the *-o'qa* modal (a point which leads to striking complexities in translation between Nez Perce and English) by appeal to environments in which one does and does not “leave open” that something is necessary in stating that it is possible. Where this study touched on questions of syntactic constituency – the distinction between the restrictor of a universal quantifier and its nuclear scope, and between the antecedent of a conditional and its consequent – I have appealed to purely pretheoretical ideas about the “*everyone who can go part*” versus the rest, the “*if part*” versus the “*then part*”.

I will conclude here with questions: To what degree can this kind of approach be generalized, and in what areas (and what ways) should it be modified? What are the range of techniques formal semanticist fieldworkers should take into consideration in opening their work to a wider audience?

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