'Irrealis' particle *ji* in Gitksan

A particle *ji* in Gitksan (Tsimshianic; VSO)[1] and a neighbouring language, Nisg̲a'a, has been glossed as an 'irrealis' marker (Rigsby, 1986; Tarpent, 1987), but no formal account of its exact semantic contribution is available. *Ji* occurs in a variety of semantic contexts, only some of which are traditionally associated with irrealis morphemes (Von Prince et al., 2022), with others seemingly involving consideration of alternatives. This paper offers a unified account of semantic contribution of *ji* by combining ingredients from the Inquisitive view on conditional antecedents and imperatives (Starr, 2014, 2020) and the literature on mood and modality (Schlenker, 2003). I will argue that *ji* generates a ranked set of alternatives, and presupposes that each alternative is a live possibility in a doxastic state of some salient agent.

Puzzle Part of the challenge posed by *ji* is its occurrence in a wide variety of semantic contexts. A subset of those contexts suggest that *ji* involves consideration of alternatives. In particular, *ji* is obligatory in embedded polar interrogative clauses (1) and conditional antecedents (2). A corpus of the language also includes five instances of *ji* in disjunctions. In fact, Matthewson (2024) and Brown (2024) suggest that *ji* (and its counterpart) creates polar alternatives in Gitksan and another Tsimshianic language, Sm'algyax.

(1) A: "Does Michael like tea?" B: "I don't know but ask Lisa..."
Wilaay[-t]=s Lisa ji anook̲=s Michael=hl dii
know[-3.II]=PN Lisa IRR like=PN Michael=CN tea
'Lisa knows whether Michael likes tea.'

(2) Ji bax̲-t nee=dii gina hetxw-t
IRR run-3.II NEG=FOC late-3.II
'If he ran, he was not late.'

However, *ji* also has occurrences that do not appear to involve alternatives at a first glance. Such cases include imperatives and hortatives (3),[2] which may have motivated the 'irrealis' label (Rigsby, 1986; Tarpent, 1987). Moreover, *ji* is licensed in attitude complements when the attitude holder or the speaker considers negation of the embedded proposition to be possible. In (4), the attitude holder is uncertain about the truth of the embedded proposition.[3] In (5), the speaker knows the embedded proposition to be false.

(3) Am ja ha'w-i'm
good IRR go.home-1PL.II
'Let's go home!' (Rigsby 1986:315)

(4) Context: The speaker ate the berries. Lisa suspects that that is the case, but isn't certain.
Ha'niigoot[-t]=s Lisa (ji) nii'y an=t gup=hl ma'ay.
think[-3.II]=PN Lisa IRR 1SG.III AX=3.I eat=CN berry
'Lisa thinks that I ate the berries.'

(5) The speaker knows that Prof. Henry Jackson is a man. A new student comes in and says "I'm looking for Miss. Jackson."
Ha'niigoot-t (ji) hanak̲[-t]=s Henry
think[-3.II] IRR woman[-3.II]=PN Henry
'He thinks that Henry is a woman.'

Analysis The obligatoriness of *ji* in embedded polar interrogatives (1) suggests that it is an alternative generator responsible for taking a proposition p and generating a set {p, ¬p}, akin to *whether* and *if* (Karttunen, 1977). Moreover, a polar interrogative analysis of conditional antecedents has been developed by

[1] Unless otherwise noted, data are obtained by elicitation with two fluent speakers using the standard methodologies in semantic fieldwork (Matthewson, 2004).

[2] The morpheme is pronounced *ji* or *ja* depending on the speakers and dialects.

[3] Although the verb *ha'niigoot* is glossed as 'think', the literal translation of *x ha'niigoot-s p* is 'it is on x's heart that p'. I assume that the modal force of the verb is weaker than strong necessity.

Starr (2014), who argues that such an analysis explains the conditional-interrogative link observed across a number of unrelated languages.

How can the polar interrogative analysis account for the modal meanings of *ji* in (3)-(5)? In fact, Starr (2020) proposes an account of imperatives using alternatives, in which an imperative p! ranks p as being preferred to its alternative, ¬p. Taking a hint from Starr (2020), I propose that the common denominator of various occurrences of *ji* is indeed alternative generation, with a ranking of p over ¬p and a presupposition that both p and ¬p are considered possible by some salient agent. A proposed denotation of *ji* is in (6), where the index 1 refers to a set of salient belief agents via the assignment g. *Ji* takes a proposition p with a presupposition that, for both p and ¬p, there is a salient belief agent in the set g(1), whose doxastic state does not rule out a possibility of the proposition being true. If defined, *ji*(p) returns a set of ordered propositions {p, ¬p}, where the underline on p indicates that it is ranked first. The idea that a single particle can evaluate the status of a proposition with respect to belief states of different agents depending on the context has a precedence in Schlenker's (2003) analysis of the indicative in French, though in a different implementation.

(6) $[\![\text{ji}_1]\!]^{w,g}=\lambda p_{st}$: $\forall q[q\in\{p, \neg p\}\rightarrow\exists x[x\in g(1) \ \& \ \exists w'[w'\in \text{DOX}_{x,w} \ \& \ q(w')=1]]]$. $\{\underline{p}, \neg p\}$

In embedded polar questions, the ranking between p and ¬p does not play any semantic role (though see Starr 2014 for a suggestion that *if* seems to foreground the positive answer in embedded polar questions). Assuming the denotation of an interrogative *wilaax* 'know' in (7) (simplified from Spector and Egré 2015, Mayr 2019), the denotation of (1) is provided in (8), with the factivity having been accommodated for concreteness. It asserts that there is a true proposition known by Lisa in the set {$\underline{\lambda w.\ M \text{ likes tea in } w}$, $\lambda w.$ M doesn't like tea in w}, and presupposes that both propositions in the set are considered possible by a salient belief agent. The presupposition is satisfied because neither the speaker nor the addressee knows whether Michael likes tea.

(7) $[\![\text{wilaax}_{int} \text{ 'know}_{int}\text{'}]\!]^{w,g,}=\lambda P_{st,t}.\ \lambda x$: $\exists p$: $p\in P \ \& \ p(w)=1$. $\forall w'[w'\in \text{EPIS}_{x,w} \rightarrow p(w')=1]$

(8) $[\![(1)]\!]^{w,g,} = 1$ iff $\exists p\in P[p(w)=1 \ \& \ \forall w'[w'\in \text{EPIS}_{Lisa,w} \rightarrow p(w')=1]]$
where P={$\underline{\lambda w.\ M \text{ likes tea in } w}$, $\lambda w.$ M doesn't like tea in w}
Defined only if $\forall q[q\in P\rightarrow\exists x[x\in g(1) \ \& \ \exists w'[w'\in \text{DOX}_{x,w} \ \& \ q(w')=1]]]$

The ranking between p and ¬p becomes crucial in conditional antecedents (2) and non-interrogative attitude complements (4, 5). I propose that when a modal or attitude verb that takes a clause containing *ji* requires a propositional argument rather than a set of propositions, a covert type-shifting operator (9) is inserted, which takes the set and returns the proposition ranked at the top, i.e., the positive answer p.

(9) $[\![\ \text{TOP}\ ]\!]^{w,g} = \lambda P_{st}.\ \tau P$ where τP is the most highly ranked alternative in P

Following the restrictor view of conditionals and assuming a covert necessity modal (Kratzer, 1981), (2) receives the denotation in (10). The presupposition that both $\underline{\text{'he ran'}}$ and 'he didn't run' are live possibilities for some belief agent is satisfied because the speaker does not know whether 'he' ran.

(10) $[\![(2)]\!]^{w,g} = [\![\ \forall\ (\text{TOP ji}_1 \text{ 'he ran')('he was not late')}\ ]\!]^{w,g} = 1$ iff $\forall w'[w'\in \text{DOX}_{s,w} \ \&$ he ran in $w' \rightarrow$ he was not late in $w']$
Defined only if $\forall q[q\in P\rightarrow\exists x[x\in g(1) \ \& \ \exists w'[w'\in \text{DOX}_{x,w} \ \& \ q(w')=1]]$, where P={$\underline{\lambda w.\ \text{he ran in } w}$, $\lambda w.$ he didn't run in w}

Finally, an attitude report about a wrong belief in (5) receives the denotation in (11), where the weaker modal force (see f.n. 3) is modeled by addition of an ordering source for concreteness. The presupposition of *ji* is satisfied by the attitude holder believing p and the speaker believing ¬p.

(11) $[\![(5)]\!]^{w,g} = 1$ iff $\forall w'[w'\in O(\text{DOX}_{he,w}) \rightarrow$ Henry is a woman in $w']$
Defined only if $\forall q[q\in P\rightarrow\exists x[x\in g(1) \ \& \ \exists w'[w'\in \text{DOX}_{x,w} \ \& \ q(w')=1]]$,
where P={$\underline{\lambda w.\ \text{Henry is a woman in } w}$, $\lambda w.$ Henry is not a woman in w}

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