

# Adverbial Clauses, INFL, and Switch Reference

Richard Larson (Stony Brook University)

Hale (1976) observes Warlpiri adjoined finite CPs like (1)-(3), marked with the complementizer *kuja-* and some questions they raise for the theory of modification.

- (1) ngajulu-rlu kapi-rna wawiri pura-mi [CP **kuja**-npa pantu-rnu nyuntulu-rlu ]  
 I-ERG AUX kangaroo cook-NPST COMP-AUX spear-PST you-ERG  
 ‘I will cook the kangaroo **which you speared**’ (= (4), Hale 1976)
- (2) ngajulu-rlu lpa-rna karli jarntu-rnu [CP **kuja**-Ø-npa ya-nu-rnu njuntu ]  
 I-ERG AUX boomerang trim-PST COMP-AUX walk-PST-HITHER you  
 ‘I was trimming a boomerang, **when you came up**’ (= (5), Hale 1976)
- (3) ngajulu-rlu Ø-na yankiri pantu-rnu, [CP **kuja**-lpa ngapa nya-nu ]  
 I-ERG AUX emu spear-PST, COMP-AUX water drink-PST  
 a. ‘I speared the emu **which was drinking water**’  
 b. ‘I speared the emu **while/when it was drinking water**’ (= (1), Hale 1976)

- In (1)-(3) a single structure is interpreted as either a relative or an adverbial clause, suggesting a commonality.  
**Question 1:** Can we give a single semantics for what Warlpiri grammar presents as a single construction?
- Cross-linguistically, distinct meanings for modifying clauses are typically encoded by distinct formal markings – e.g., by **variable typing** or by “**subordinating conjunctions**”. Warlpiri shows neither.  
**Question 2:** How are inter-clausal relations established grammatically in the Warlpiri adjoined clause structure?

In this talk, I:

- propose that Warlpiri adjoined finite CPs with *kuja/kaji* can be given a unified semantic analysis as denoting properties (of individuals, times, locations, worlds) that furnish restrictions on an “INFL” quantifier.
- argue for the existence of the relevant INFL elements based on “noncanonical” switch reference as analyzed recently by Oliver 2025.
- observe that adjoined finite CPs with *yungulyi-* are not construable as quantifier restrictions.
- propose that *kuja/kaji* vs. *yungulyi-* be seen as a form of generalized switch reference **marking indicating identity/non-identity of main clause/ subordinate clause variables**.
- observe (following Hale 1976 & Austin 2021) that Warlpiri nonfinite clauses exhibit switch reference.

## 1.0 A Unified Semantics for Warlpiri Adjoined Clauses?

A unified semantics for the Warlpiri adjoined structure (4) faces immediate problems.

- (4) [TP TP [CP *kuja* ... ]]

### 1.1 Adverbial clauses (ACs)

ACs are typically analyzed semantically either as **functors** applying to the interpretations of their sisters (5a), or as **event predicates** conjoining to the interpretations of their sisters (5b).

- (5) a. [TP TP CP] → [[CP]]([TP]) Thomason & Stalnaker (1973)  
 b. [TP TP CP] → λe[[TP](e) & [[CP]](e)] Parsons (1991)

### 1.2 Relative clauses (RCs)

RCs are typically analyzed as **individual predicates** composed with their sisters by conjunction (6). But the relevant sister is invariably NP in the associated nominal, not TP:

- (6) [NP NP CP] → λx[[NP](x) & [[CP]](x)] Montague (1974)

Given this, peripheral relatives like (7) present a clear compositionality challenge: RC is not a constituent with the NP it modifies (*man*).

- (7) A **man** came in [CP **who I didn’t know**].

Two broad solutions have been offered.

#### 1.2.1 Syntactic Separation

Peripheral RCs derive their surface position by **rightward movement** (8a-b). Assuming CP is interpreted in base position, the compositionality challenge is met.

- (8) a. [TP [TP ... [DP D NP CP] ... ] CP ]  
 b. [TP [TP A man [CP **who I didn’t know**] came in] [CP **who I didn’t know** ]

This account is plausible for languages w/both embedded & peripheral RCs (e.g., Hindi). But embedded internal finite RCs do not occur in Warlpiri (Hale 1976). Indeed, embedding of any finite clauses in Warlpiri remains controversial (see Legate 2009, 2011; Levinson 2013; Legate, Pesetsky and Yang 2014).

And even if Warlpiri RCs are extraposed, what about ACs? What becomes of unification?

### 1.2.2 Semantic Association

Nominals are interpreted as containing a **distinguished restriction variable R** (9a). R is abstracted over when TP and CP are combined (9d). The result “moves” the RC denotation into the nominal denotation:

- ↓
- (9) a. *a man* →  $\lambda P\exists x[\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ P(x)]$   
 b. *a man came in* →  $\exists x[\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{came-in}(x)]$   
 c. *who I didn't know* →  $\lambda y[\neg\text{know}(l,y)]$   
 d. *a man came in who I didn't know* →  
 $\lambda R[\exists x[\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{came-in}(x)]] \ (\lambda y[\neg\text{know}(l,y)])$   
 $\exists x[\text{man}(x) \ \& \ \neg\text{know}(l,x) \ \& \ \text{came-in}(x)]$
- (10)  $[_{TP} \ TP \ CP] \rightarrow \lambda R[_{TP}](\lambda x[_{CP}])$  Cooper (1975), Bach & Cooper (1978)

Suppose this semantic analysis is applicable to Warlpiri adjoined CPs understood as RCs, what about ACs? (10) is non-identical to either of (5a-b). Again, what becomes of unification?

### 1.3 When-clauses as Temporal RCs

Larson (1982) suggests assimilating some temporal Warlpiri ACs to RCs under the semantics in (10). Specifically:

- Analyze tenses as quantifiers with a similar restriction variable R.
- Take adjoined clauses to supply a temporal property for R.

Compare (7)/(11) and (9a)/(12a) and (10)/(13).

(11) A man came in  $[_{CP} \ \text{when I was alone}]$ .

- (12) a. *PST* →  $\lambda T\exists t [t < t^* \ \& \ \mathbf{R}(t) \ \& \ T(t)]$   
 b. *a man come in* →  $\lambda t[AT(t, \exists x [\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{come-in}(x)])]$   
 c. *a man came in* →  
 $\exists t [t < t^* \ \& \ \mathbf{R}(t) \ \& \ AT(t, \exists x [\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{come-in}(x)])]$   
 d. *when I was alone* →  $\lambda t [t < t^* \ \& \ AT(t, \text{alone}(l))]$   
 e. *a man came in when I was alone* →  
 $\lambda R' [ \exists t [t < t^* \ \& \ \mathbf{R}(t) \ \& \ AT(t, \exists x [\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{come-in}(x)])]$   
 $(\lambda t [t < t^* \ \& \ AT(t, \text{alone}(l))])$   
 $\exists t [t < t^* \ \& \ AT(t, \text{alone}(l)) \ \& \ AT(t, \exists x [\text{man}(x) \ \& \ \mathbf{R}(x) \ \& \ \text{come-in}(x)])]$

(13)  $[_{TP} \ TP \ CP] \rightarrow \lambda R[_{TP}](\lambda t[_{CP}])$  Larson (1982)

Combining (10) & (13) allows for interpretation of multiple peripheral clauses (14):

(14) A man came in  $[_{CP} \ \text{when I was alone}]$   $[_{CP} \ \text{who I didn't know}]$ .

### 1.4 Additional Readings of Adverbial Clauses

So far so good. An adjoined temporal clause restricts T in the main TP. But consider the examples of *kuja/kaji*-clauses in (15)-(18). In (15) CP has a conditional meaning; in (16)-(17) a locative meaning; in (18a-b) a contrastive & ‘enabling’ meaning (18a-b), resp.

(15)  $[_{CP} \ \text{kaji-lp-npa} \ \text{yangka warlu-ngka purra--} \ \text{yi-ka-ju}]$   
 COMP-PERF-2 that fire-LOC cook-IRR meat-E.G.  
*yinka kajika-npa watiya-rlu kuyu yurduyurduma-ni* (= (17), Hale 1986)  
 that POTENTIAL-2 stick-INST meat turn-NPST  
 ‘If you were cooking meat on a fire, e.g., you might turn it over with a stick’

(16) a. *ya-ni ka-rna-*  $[_{CP} \ \text{kuja-ka} \ \text{nyanungu nyin-mi}]$   
 go-PST AUX-1.SG COMP-AUX him stay-NPST  
 ‘I’m going where he lives’ (Hale nd, unpublished fieldnotes)  
 b. *nya-ngu-rna- nyanungu-ju*  $[_{CP} \ \text{warna kuja-npa pu-ngu}]$   
 see-PST-1.SG him-OLDINFO snake COMP-AUX hit-PST  
 ‘I saw him where you killed the snake’ (Hale nd, unpublished fieldnotes)

(17)  $[_{CP} \ \text{yapa kuja-ka} \ \text{yangka yali-rlu pali}]$   
 person COMP-PRES that that-LOC die(-NPST)  
*kula-ka-lu ngula-ngka nyina kutu*  
 NEG-PRES-333 that-loc sit(-NPST) nearby  
 a. ‘When a person dies, they don’t stay close by there’  
 b. ‘Where a person dies, they don’t stay close by there’ (= (18), Hale 1986)

(18) a.  $[_{CP} \ \text{kuja-ka-rlu yuwali nganti-ni julpu panu-kari-li kankalu watiya-rla}]$   
 COMP-AUX nest build-NPST bird many-other-ERG up tree-LOC  
*mana-ngka ka-nyanu jinjiwanu-rlu nganti-ni yujuku padu*  
 spinifex-LOC COMP-AUX jinjiwarnu-ERG build-NPST shelter-DIMIN  
 ‘Whereas many other birds build a nest up in a tree, the jinjiwarnu bird builds itself a small shelter in spinifex grass.’  
 b.  $[_{CP} \ \text{nyampu kuja-ka-na junma mada-ni ngajulu-rlu}]$   
 this COMP-AUX knife have-NPST I-ERG  
*ngula kapi-rna-ju ngajulu-rlu-lku paji-ni*  
 so AUX-REFLEX I-ERG-NOW/THEN cut-NPST  
 ‘Now that I have this knife, I am going to cut myself’

How do we extend the analysis to these cases too? Where are the elements comparable to NP and T that will support (19b-c), and hence a general, unified scheme for interpreting adjoined clauses as in (20):

- (19) a.  $[_{TP} TP CP] \rightarrow \lambda R [_{TP}] (\lambda x[_{CP}])$  RC-reading  
 b.  $[_{TP} TP CP] \rightarrow \lambda R [_{TP}] (\lambda t[_{CP}])$  Temporal AC-reading  
 c.  $[_{TP} TP CP] \rightarrow \lambda R [_{TP}] (\lambda l[_{CP}])$  Locational AC-reading  
 d.  $[_{TP} TP CP] \rightarrow \lambda R [_{TP}] (\lambda w[_{CP}])$  Conditional AC-reading

- (20)  $[_{TP} TP CP] \rightarrow \lambda R [_{TP}] (\lambda \alpha[_{CP}])$

## 2.0 Switch-Reference – Canonical & “Non-canonical” (Oliver 2025)

Switch reference (SR) languages indicate grammatically whether the subjects of adjacent clauses are same or different. (21a-b) are typical examples from Mojave:

- (21) a. *nya-isvar-k i:ma-k*  
 when-sing-SS dance-TNS  
 ‘When he<sub>i</sub> sang, he<sub>i</sub> danced.’  
 b. *nya-isvar-m i:ma-k*  
 when-sing-DS dance-TNS  
 ‘When he<sub>i</sub> sang, he<sub>j</sub> danced.’ (Langdon and Munro 1979:322-323)

-k in (21a) indicates that the 3<sup>rd</sup> person singular subjects of the main & subordinate clauses - neither expressed overtly - are the same (SS) (marked by coindexing). -m in (21b) indicates the subjects are different (DS) (marked by contra- indexing).

Jacobsen 1967, which introduces SR, notes cases falling outside the pattern in (21). (22) exhibits a DS-marker even though the main & adverbial clause subjects are the same. (23) exhibits an SS-marker even though the conjoined clause subjects are different.

- (22) *nʸ i:-nʸ a:-m-eqwev-m m-adu-m k-aya=m-k* Quechan  
 loc?-when-2-cannot-DS 2-be-tns imp-go=away-SS  
 ‘If you can’t do it, you can go home.’ (Slater 1977:27)

- (23) *Kathryn gya-gút go Esther=al gya-gút* Kiowa  
 Kathryn 3sg.agt:pl.pat-write.pf SS Esther-too 3sg.agt:pl.pat-write.pf  
 ‘Kathryn wrote a letter and Esther wrote one too.’ (Watkins 1993:148)

Oliver (2025) describes such examples as showing “non-canonical SR” marking.

### 2.1 Parameter Tracking

Filed workers do not describe non-canonical SR uses as “exceptional”, but rather as consistent with a broader view of their function as main clause-subordinate clause “parameter tracking.”

### 2.1.1 Time-Tracking

McKenzie (2015) interprets the DS-marker -ak in (24) from Madan as tracking “event discontinuity” rather than subject non-identity:

- (24) *ki-pxe-ak ki-raqE-rj ka-si:-wj-o:wak-o?š ki-ruwq?k-ši-s*  
 MV-land-DS MV-getup-SS ICPT-travel-PROG-NPS-PMA ?-man-good-DEF  
 ‘Coyote landed, got up, and started traveling.’  
 (Mixco 1997:240) cited in McKenzie (2015:425)

McKenzie (2015) writes: “Non-canonical DS-marking is often found at the boundary between two parts of a narrative, to signal an episodic shift. In [(24)] it signals a shift in the narrative from the events leading up to the fall to the events subsequent to getting up” (425-426).

Similar phenomena arise in Quechan as described in Slater 1977.

- (25) a. *'-ava=m-k 'ukanav-k 'a'av-š*  
 1-arrived=DIR-SS 3/1-inform-SS 1-hear-TNS  
 ‘I arrived there and tried to tell him.’  
 (cf. ‘While arriving, I tried to tell him.’)  
 b. *'-ava=m 'ukanav-k 'a'av-š*  
 1-arrived=DS 3/1-inform-SS 1-hear-TNS  
 ‘On arriving, I tried to tell him.’  
 (cf. ‘After arriving, I tried to tell him.’) (Slater 1977:28)

Slater (1977) writes: “the -m-marked verb in [(25b)] is actually a stative referring to the situation resulting from the action indicated by the verb stem” (p. 28).

### 2.1.2 Location-Tracking

In describing SR marking in Amele, Roberts (1988) states “DS markings can occur across clauses that have the same subject NPs. The explanation given by native speakers for such instances is that ‘something has changed’ or this is ‘a new situation,’ and often it is obvious...that these deictic changes are in the area of world, time, or place reference points.” (p. 60). Roberts offers (26) of DS-marking reflecting a change of spatial location:

- (26) *Age ceta guldo-co-bil l-i bahim na tac-ein*  
 3P yam carry-DS-3P go-(SS) floor on fill-3P.REM.P  
 ‘They carried the yams on their shoulders and went and filled up the yam store.’  
 (Roberts 1988:61)

Evidently, the “carrying the yams” & “going and filling up the yam store” situation occur in two different locations, hence the DS-marker appears,

**2.1.3 World-Tracking**

As a candidate example for possible world tracking in an SR language, consider (22) from Quechan, repeated below as (27). The example exhibits a DS-marker even though the main & conditional clause subjects are the same.

(27) nʸ i:-nʸ a:-m-eqwev-**m** m-adu-m k-aya=m-k Quechan  
 loc?-when-2-cannot-**DS** 2-be-tns imp-go=away-SS  
 'If you can't do it, you can go home.'

One plausible way of interpreting this example, in line with Roberts remarks on Amele is "In a/the case different than the one needed, where you do the required action, you can go home'. Here the relevant difference signaled by DS is not time of location, but possibility or alternative world.

**2.1.4 Multiple Parameter Tracking**

Oliver (2025) notes that some SR system appear to mark more than one "situation parameter" at a time. A simple example is Mandan, which appears to encode both subject & world coincidence/noncoincidence in its SR system. Oliver gives the table in (28a) (from Mixto 1997) and examples (28b-c) illustrating the bottom row.

(28) a.

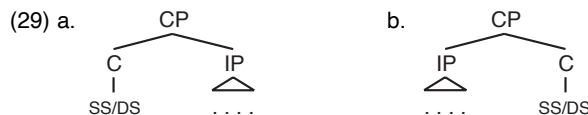
	REALIS	IRREALIS
SAME SUBJECT	- <i>rj</i>	- <i>rj</i>
DIFFERENT SUBJECT	- <i>ak</i>	- <i>ki</i>

- b. *rj-wa:ha:p-ak wa-hE-o?š*  
 S2-lost-**DS.R** A1-see-IND.MA  
 'I see that you are lost.'
  - c. *rj-wa:ha:p-rjt-ki e:=ru-rE:h-o?š*  
 S2-lost-**DS.IRR** PV= A1PL-want-IND.MA  
 'We want you(pl) to be lost.'
- (Mixco 1997:232)

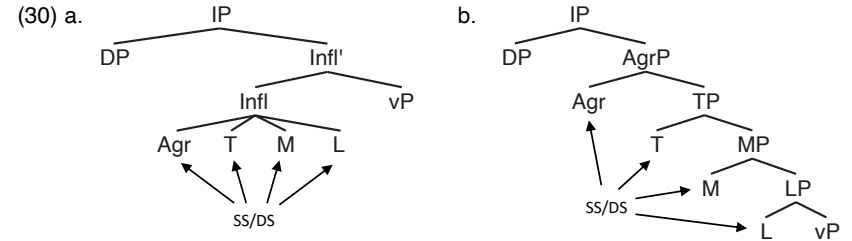
In (28c), the addressee's being lost is not factual, hence the clause is marked (DS) irrealis.

**2.2 The Grammar of SR markers**

Many prior analyses propose that SR morphemes occur within C on the clause-periphery (29a-b).



Oliver (2025) argues that they occur within INFL (30a), or its equivalent "span" in the extended vP projection (30b).



The argument is two-fold.

**2.2.1 Complementarity with INFL Elements**

Cross-linguistically, SR morphemes & tenses exhibit complementary distribution. In the Mojave examples (21a-b), and the examples that follow them, the subordinate clause is tenseless, with -SS/-DS occupying the usual position of -TNS. The near minimal pair in (31a-b) from Quechua illustrates the same point.

- (31) a. *rika-ya-ma-rqa-yki*  
 see-PL-1OBJ-**PST-2**  
 'you(pl) saw me/us'
  - b. *rika-ma-pti-yki*  
 see-1OBJ-**DS-2**  
 'when you see me'
- (Lakämper and Wunderlich 1998:115, cited in Assmann (2012:45))

**2.2.2 Homophony with INFL Elements**

SR morphemes are also frequently homophonous with INFL elements, suggesting a derivational relation. Roberts (1997) reports Alablak as having homophonous SR & agreement markers. In (32), the DS-morpheme -*t* in *hingna-më-t-a* is homophonous with the 3<sup>rd</sup> person singular marker -*t* in *fa-më-t-a*.

- (32) Na *hingna-më-t-a mëfha-t fa-më-t-a*  
 1sg work-remp-ds-1sg head-3sg.f eat-remp-3sg.f.a-1sg.m  
 'I worked hard and my head hurt me.'
- (Roberts 1997:162)

In Quechan the DS-marker -*m* appears independently in simple clauses as a modal, signaling reference to a possible world (33a-d).

- (33) a. *naPáv*  
 'to hear'
- b. *aPáv-m*  
 'to be able to hear'
- c. *aPé*  
 'to say'
- d. *aPé-m*  
 'to be able to say' (Halpern 1947:29)

Quechan SR markers also function as directionals, with the “SS-morpheme” *-k* marking orientation toward speaker (34a-b) and the “DS-morpheme” *-m* marking orientation away (34c-d).

- (34) a. napá-**k** 'to arrive **here**'  
 b. v-aḏú-**k** 'to be facing towards **here**'  
 c. apá-**m** 'to arrive **there**'  
 d. v-aḏó-**m** 'to be facing towards **there**'

The latter recall Halkomelem, which Ritter and Wiltschko’s (2014) analyze as involving a locative in auxiliary position (35a-b).

- (35) a. í qw’eyílex tútl’ó  
 PROX dance he  
 ‘He is/was dancing [**here**].’  
 b. lí qw’eyílex tútl’ó  
 DIST dance he  
 ‘He is/was dancing [**there**].’  
 (Ritter and Wiltschko 2014:1341)

**2.3 The Interpretation of SR markers**

Early views followed Jacobsen 1967 in analyzing SR via reference & binding (Finer 1985). Some recent MP work has attempted reanalysis in terms of phi-agreement (Camacho 2010, Clem 2023, Watanabe 2000).

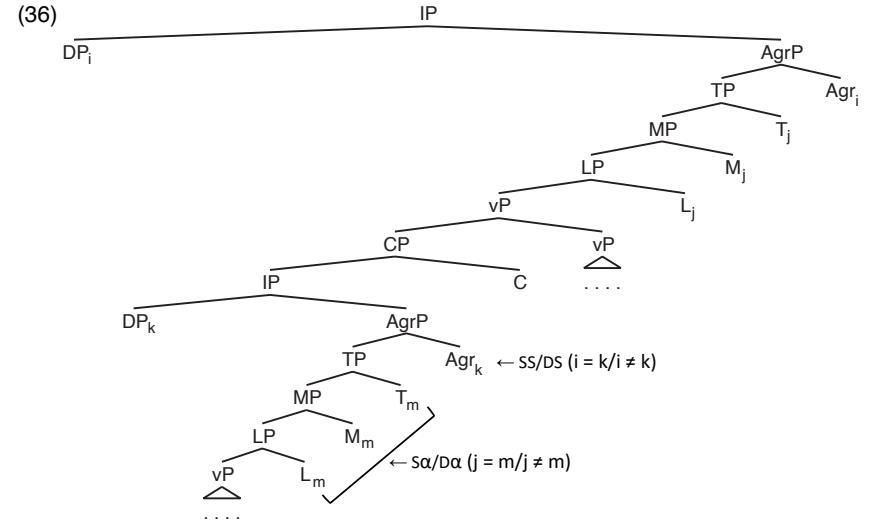
Examples like (21a-b) show SS/DS-alternation where reference differs, but agreement (3s) doesn’t (Keine 2013). And what about non-canonical SR-marking? Agreement for world/loc doesn’t occur! Oliver 2025 offers the picture in (36) (next page), which adopts Ritter & Wiltschko’s (2014) proposal that the “Infl span” include a locative element (L). SR systems involve “Infl-to-Infl” binding:

- SS/DS-alternation → binding between Agrs  
 sa/da-alternation (where α = T/M/L) → binding between Ts/Ms/Ls

**NB:** This picture requires Infl to contain a referential element able to participate in binding relations in each constituent category,. Assume these to contain implicit restrictions, like other referential elements (37).

We then unify our results in (38) & (39), answering our first key question:

**Question 1:** Can we give a single semantics for what Warlpiri grammar presents as a single construction?



- (37) a. Agr ⇒ λP∃x∀y[[R(y) ↔ y = x] & P(x)]  
 ‘the unique individual who is R’  
 b. PST ⇒ λT∃t∀t’[[[t’ < t\* & R(t’)] ↔ y = x] & T(t)]  
 ‘the unique past time that is R’  
 c. M ⇒ λW∃w∀w’[[[A(w’,w\*) & R(w’)] ↔ w’ = w] & W(w)]  
 ‘the unique accessible world that is R’  
 d. L ⇒ λL∃l∀l’[[[O(l’,l\*) & R(l’)] ↔ l’ = l] & W(w)]  
 ‘the unique overlapping location that is R’

- (38) a. [<sub>IP</sub> IP CP] → λR [[IP]] (λx[[CP]]) RC-reading  
 b. [<sub>IP</sub> TP CP] → λR [[IP]] (λt[[CP]]) Temporal AC-reading  
 c. [<sub>IP</sub> TP CP] → λR [[IP]] (λw[[CP]]) Conditional AC-reading  
 d. [<sub>IP</sub> TP CP] → λR [[IP]] (λl[[CP]]) Locative AC-reading

(39) [<sub>TP</sub> TP CP] → λR [[TP]] (λα[[CP]])

**3.0 Meaning and Form**

Main clause-adjoined clause relations are marked according to different patterns.

**3.1 Variable Typing**

Hindi/Marathi correlatives (40) exhibit **variable typing**. The adjoined clause provides a property λα[[CP]] (41). Morphology marks **the type of α**. (Bhatt and Lipták 2009)

(40) Construction	Adjoined Clause	Main Clause
Relativization	[... <i>jo</i> ...] 'who'	[... <i>vo</i> ...] 'he/she'
Comparative	[... <i>jitnaa</i> ...] 'how much'	[... <i>us-sejyaada</i> ...] 'that-THAN more'
Equative	[... <i>jitnaa</i> ...] 'how much'	[... <i>utnaa</i> ...] 'that much'
Conditional	[... <i>dzar</i> ...] 'if'	[... <i>tar</i> ...] 'then' <i>Marathi</i>
When-clause	[... <i>jab</i> ...] 'when'	[... <i>tab</i> ...] 'then'
Until-clause	[... <i>jab-tak</i> ...] 'when-TILL'	[... <i>tab-tak</i> ...] 'then-TILL'
Since-clause	[... <i>jab-se</i> ...] 'when-SINCE'	[... <i>tab-se</i> ...] 'then- SINCE'

(41) Construction	Adjoined Clause	Variable Type
Relativization	$\lambda x$ [[CP]] - <i>o</i>	Individuals
Comparative/ Equative	$\lambda d$ [[CP]] - <i>naa</i>	Degrees/Degree Intervals
Conditional	$\lambda w$ [[CP]] - <i>ar</i>	Worlds
When-clause	$\lambda t$ [[CP]] - <i>ab</i>	Times/Time Intervals
Until-clause	$\lambda i$ [[CP]] - <i>ab-tak</i>	Time Intervals (-) ??
Since-clause	$\lambda i$ [[CP]] - <i>ab-se</i>	Time Intervals [-] ??

The property phrase composes with a main clause definite pronoun/proadverb, whose semantics involves a variable ( $\alpha$ ) of matching type (42).

$$(42) [{}_{TP} \dots \exists \alpha \forall \beta [ [Q(\beta) \leftrightarrow \beta = \alpha] \ \& \ \mathbf{R}(\alpha) \ \& \ P(\alpha) ] \dots] \quad \lambda \alpha [{}_{CP}]$$

### 3.2 Subordinating Conjunctions

English uses the variable typing strategy with RCs, *when/where*- clauses and possibly conditionals; the form of *wh*- (or C) marks the property type (43).

(43) Construction	Subordinate Clause	Variable Type
Relativization	[ <sub>CP</sub> <i>who/what/etc.</i> C [ <sub>TP</sub> ...t... ]]	Individuals
When-clause	[ <sub>CP</sub> <i>when</i> C [ <sub>TP</sub> ...t... ]]	Times/Time Intervals
Where-clause	[ <sub>CP</sub> <i>where</i> C [ <sub>TP</sub> ...t... ]]	Locations
Conditional	[ <sub>CP</sub> OP <i>if</i> [ <sub>TP</sub> ...]]	Worlds

But English also exhibits a range of “subordinating conjunctions” analyzed since Emonds (1976) as clause-selecting Ps (44).

(44) Construction	Subordinate Clause
Conditional	[ <sub>PP</sub> <i>if</i> [ <sub>TP/CP</sub> ...]]
Comparative	[ <sub>PP</sub> <i>than</i> [ <sub>CP</sub> ...]]
Equative	[ <sub>PP</sub> <i>as</i> [ <sub>CP</sub> ...]]
Until-/Since-clause	[ <sub>PP</sub> <i>until/since</i> [ <sub>CP</sub> ...]]
Because-clause	[ <sub>PP</sub> <i>because/although</i> [ <sub>CP</sub> ...]]

In semantic analyses, P encodes the inter-clausal relation. (45) (from Dowty 1979) represents the meaning of *since* (where XN is the Extended Now predicate):

$$(45) \textit{since} \rightarrow \lambda \mathcal{P}_i \lambda \mathcal{P}_t \mathcal{P}_t \{ \wedge t_1 [ \forall t_2 [ [ t_2 < t_1 \ \& \ XN(t_2) ] \rightarrow \mathcal{P}_t \{ t_2 \} ] ] \}$$

The type structure of *since* dictates its complement’s construal as a property of times, not anything within the complement itself.

Warlpiri adjoined clause syntax doesn’t seem to deploy either strategy.

- No variable typing (COMP is a constant form *kuja/kaji*)
- No overt subordinating conjunctions

**Question:** How does Warlpiri work?

### 3.3 Yungu/Yi- Clauses & Purposives

Hale (1986) notes a second set of [<sub>TP</sub> TP CP] structures marked by *yungu/yi*-. These are construed as rationale or purpose clauses, depending on tense (46a-c):

- (46) a. ngajulu-rlu kapi-na maliki yalumpu paka-rni  
 I-ERG AUX dog that strike-NPAST  
 [<sub>CP</sub> **yungu**- $\emptyset$  kurdu nyampu yalku-rnu ]  
 COMP-AUX child this bite-PAST  
 ‘I am going to strike that dog **because** it bit this child’ (= (9), Hale 1976)
- b. ngarka-jara-rlu ka-pala parlku pangi-ni [<sub>CP</sub> **yungu**- $\emptyset$ -pala wawiri pura-mi]  
 man-DUAL-ERG AUX trench dig-NPST COMP-AUX kangaroo cook-NPST  
 ‘The two men are digging a cooking trench **in order to** cook the kangaroo’  
 (= (10), Hale 1976)
- c. Nyampu ka-rna-rla warru-nya-nyi watiya-ku  
 this pres-1-3SGDAT around-see-NPST tree-DAT  
 [<sub>CP</sub> **yungu**-rna rdilykirdilyki-paka-rni ]  
 COMP- $\emptyset$ -1 broken-chop-NPST  
 ‘I am looking around for a tree **to** chop up’ (= (22), Hale 1986)

Hale (1986) offers an interesting speculation about *kuja/kaji*- vs. *yungu/yi*-marking:

- i. *kuja/kaji*-CPs express “a **central coincidence** of some aspect of the dependent clause with a corresponding aspect of the main clause” – e.g., “referential, temporal, circumstantial and condition.”
- ii. *yungu/yi*-CPs express **non-central coincidence**; denote “a sequential relation ...in which one event or process precedes or follows another.”

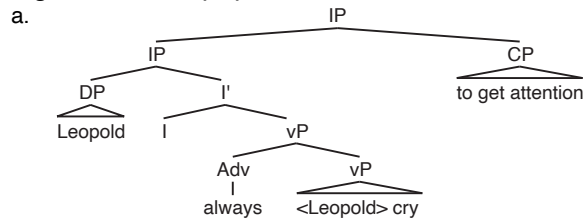
(38-39) express something very close to (i): adjoined restrictions end up sharing a variable with a referential element in the main clause (x, t, w, e, etc.).

How do *yungu/yi*-clauses fit in with our proposed semantics?

Interestingly, rationale/purpose clauses appear never to be interpreted as restrictions (Johnston 1994). Consider (47a) with ambiguity (47b,c):

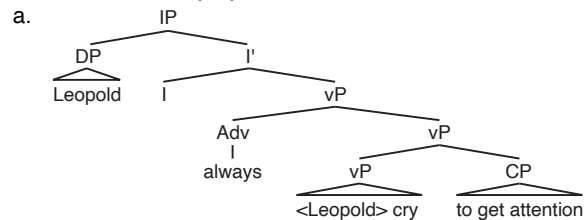
- (47) a. Leopold always cried to get attention.  
 b. **Reading 1**: “On all relevant occasions Leopold cried, and his purpose in this pattern of behavior was to get attention.”  
 c. **Reading 2**: “On all occasions that Leopold cried, it was to get attention.”
- (48) a. Leopold always misspells his name, just to irritate his teacher. (R1)  
 b. Leopold always robs an ATM to get quick cash. (R2)

(49) **High Attachment (R1)**



- b.  $\exists e \exists e^* [\text{Leo get attention}(e) \ \& \ \text{CAUSE}(e, e^*) \ \& \ \text{ALWAYS}(R, \lambda e' [\text{Leo cry}(e')], e^*)]$   
 ↑    ↑    ↑    ↑    ↑  
**Q** **Restr** **Scope**

(50) **Low Attachment (R2)**



- b.  $\text{ALWAYS}(R, \lambda e [\exists e' [\text{Leo get attention}(e) \ \& \ \text{CAUSE}(e', e) \ \& \ \text{Leo cry}(e')]], e^*)]$   
 ↑    ↑    ↑    ↑    ↑  
**Q** **Restr** **Scope**
- c.  $\text{ALWAYS}(\lambda e [\text{Leo cry}(e)], \Leftarrow \text{Restr } \lambda e [\exists e' [\text{Leo get attention}(e) \ \& \ \text{CAUSE}(e', e) \ \& \ \text{Leo cry}(e')], e^*])]$   
 ↑    ↑    ↑    ↑    ↑  
**Q** **Scope**

In (47b)/(49), the restriction is supplied contextually. In (47c)/(50), the restriction is supplied by the smaller VP.

What we do not appear to get is a reading where the *purpose*-clause itself supplies the restriction (51):

- (51)  $\text{ALWAYS}(\lambda e' [\exists e [\text{Leo get attention}(e) \ \& \ \text{CAUSE}(e, e')]], \lambda e'' [\text{Leo cry}(e'')], e^*)$   
 “Every eventuality whose purpose is to get Leo attention is an eventuality of Leopold crying.”

Why? Larson & Sawada (2014) conjecture such readings are excluded because of **sortality**. Restrictions must be sortal (= countable) preds.

- (52) a. Marty always shaves when he is in the shower. Ambiguous  
 b. Marty always SHAVES when he is in the shower. (Adjunct Restriction)  
 c. Marty always shaves when he is in the SHOWER. (MC Restriction)
- (53) a. Marty is always in the shower when he shaves. Unambiguous!  
 b. Marty is always in the SHOWER when he shaves. (Adjunct Restriction)  
 c. Marty is always in the shower when he SHAVES. (Adjunct Restriction!)

In (52) both Adjunct and Main Clause provide sortal predicate:

- Adjunct Clause provides a sortal predicate of times
- Main Clause provides a sortal predicate of events (*shaves* is telic)

In (53) only the Adjunct Clause provides a sortal predicate:

- Adjunct Clause provides a sortal predicate of times
- Main Clause provides a nonsortal predicate of events (*in the shower* is nontelic)

Compare also (54) (due to Westerstahl) to (55):

- (54) a. Many Norwegians have won the Nobel Prize Ambiguous  
 b. Many Norwegians have WON THE NOBEL PRIZE (NP Restriction)  
 c. Many NORWEGIANS have won the Nobel Prize (MC Restriction)
- (55) a. Many Norwegians are tall. Unambiguous  
 b. Many Norwegians are TALL. (NP Restriction)  
 c. Many NORWEGIANS are tall. (NP Restriction)

- **CAUSE** relates eventualities of all types (telic/non-telic)
- $\lambda e [\exists e' [\text{Leo get attention}(e) \ \& \ \text{CAUSE}(e', e)]]$  is thus indeterminate wrt telicity
- $\lambda e [\exists e' [ \dots \ \& \ \text{CAUSE}(e', e) ]]$  cannot restrict a Q-adverb

**Implication:** If *kuja* marks Warlpiri clauses that (co-)restrict a main clause referential element, then purposives should not be expressed via *kuja*-clauses.

**Proposal:** *Kuja/kaji vs. yungu/yi-* represents a form of **obviation marking** similar to SR:

- Adjoined restrictions end up sharing a variable with a quantifier in the main clause (*x, t, w, l*, etc.).
- Adjoined non-restrictions do not.
- *Kujakaji vs. yungu/yi* marks shared vs. non-shared reference (resp.).

If correct, have an answer our second key question:

**Question 2:** How are inter-clausal relations established grammatically in the Warlpiri adjoined clause structure?

### 3.4 Switch Reference in Warlpiri

Warlpiri exhibits an SR system in infinitival subordinate clauses expressing temporal coincidence ('while'-clauses) (Austin 1981).

The infinitive is marked as having a SUBJ non-coreferential or coreferential with a main clause argument. If coreferential, then either coreferential with the main clause subject, or coreferential with a main clause non-subject (direct or indirect object) (56). Examples in (57-59).

(56) Warlpiri SR Marking in Infinitives

Non-coreferential	Coreferential	
	Subject	Non-Subject
<i>-ngkarni / -rlarni</i>	<i>-karra</i>	<i>-kurra</i>

(57) kurdu ka jarda-nguna-mi kirda-nyanu-ku, [karli  
child-ABS AUX sleep-lie-NONPAST father-OWN-DAT boomerang-ABS  
jarnti-rninja-rlarni].  
trim-INF-NC  
'The child is sleeping while his father trims a boomerang' (= (16), Hale 1976)

(58) ngarrka ka wangka-mi, [karli jarnti-rninja-karra].  
man-ABS AUX speak-NONPAST boomerang-ABS trim-INF-CS  
'The man is speaking while trimming a boomerang' (= (13), Hale 1976)

(59) ngajulu-rlu rna yankirri pantu-rnu, [ngapa nga-rninja-kurra].  
I-ERG AUX emu-ABS spear-PAST water-ABS drink-INF-CNS  
'I speared the emu while it was drinking.' (= (11), Hale 1976)

Notably, **purposive infinitives don't participate in the SR system**. They are inflected with their own complementizer (*-ku*) and take the MC subject as controller (54).

(54) ngarka-jara-rlu ka-pala parlku pangi-ni [wawiri pura-rninja-ku]  
man-DUAL-ERG AUX trench dig-NPST kangaroo cook-INF-COMP  
'The two men are digging a cooking trench to cook the kangaroo'  
(= (20), Hale 1976)

### SUMMARY

- Warlpiri *kujakaji* adjoined clauses appear to express a unified semantic concept: restriction on an element in the MC "IFL span"
- Warlpiri *yungu/yi-* adjoined clauses appear to express adjunct meanings not associated with restriction.
- Hypothesis: *kujakaji vs. yungu/yi-* expresses overlap vs. obviation on main clauses variables. This is close to Hale's (1986) localist view, and to his 1976 view of *kujakaji* as having "referential function"
- Warlpiri infinitival clauses show a parallel distribution: a group involve referential relations to the main clause (with SR & temporal overlap); another group (purposives) do not.

### REFERENCES

- Bach, E. and R. Cooper (1978) The NP-S analysis of relative clauses and compositional semantics. *Linguistics and Philosophy* 2: 145-150.
- Bhatt, R. and A. Lipták (2009) Matching effects in the temporal and locative domain. In Anikó Lipták (ed.) *Correlatives Cross-Linguistically*. (pp.343-372) Amsterdam: John Benjamins.
- Cooper, R. (1975) *Montague's semantic theory and transformational syntax*. PhD thesis. UMass-Amherst.
- Dayal, V. (1996) *Locality in wh-quantification: Questions and relative clauses in Hindi*. Dordrecht: Kluwer.
- Dowty, D. (1979) *Word meaning and Montague grammar*. Dordrecht: Kluwer.
- Hale, K. (1976) The adjoined relative clause in Australia. In R. M. W. Dixon (ed.) *Grammatical Categories in Australian Languages*. (pp. 78-105) New Jersey: Humanities Press.
- Hale, K. (1986) Notes on world view and semantic categories: some Warlpiri examples. In R. Huybregts and H. van Riemsdijk (eds.) *Features and projections*. (pp. 233-254) Dordrecht: Foris.
- Johnston, M. (1994) *The syntax and semantics of adverbial adjuncts*. Ph.D. Thesis, UCSC.
- Larson, R.K. (1982) A note on the interpretation of adjoined relative clauses. *Linguistics and Philosophy* 5: 473-482.
- Legate, J. (2009) Clausal recursion and embedding in Warlpiri. unpublished ms. University of Pennsylvania.
- Legate, J. (2011) Warlpiri *wh*-scope marking. *Syntax* 14: 97-121.
- Legate, J., D Pesetsky and C. Yang (2014) Recursive misrepresentations: a reply to Levinson (2013). *Language* 90:515-528
- Levinson, S. (2013) Recursion in pragmatics. *Language* 89:149-162.
- Montague, Richard (1974) *Formal philosophy*. New Haven: Yale University Press.
- Parsons, Terence (1991) *Events in the semantics of English*. Cambridge, MA: MIT Press.
- Simpson, J. (1991) *Warlpiri morpho-syntax. A lexicalist approach*. Dordrecht: Kluwer.
- Srivastav, V. (1991) The syntax and semantics of correlatives. *Natural Language and Linguistics Theory* 9: 637-686.
- Thomason, R. and R. Stalnaker (1973) A semantic theory of adverbs. *Linguistic Inquiry* 4: 195-220.