Complex Events, Propositional Overlay, and the Special Status of Reciprocal Clauses

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Among all the countless things and classes that there are, most are miscellaneous, gerrymandered, ill-demarcated. Only an elite minority are carved at the joints, so that their boundaries are established by objective sameness and difference in nature. (Lewis 1984:227)

Uncritical semantics is the myth of a museum in which the exhibits are meanings and the words are labels. (Quine 1969:27)

1 Events and Semantic Typology\(^1\)

Semantic typology is the systematic cross-linguistic study of how languages organize meaning into form.\(^2\) It may be regarded as a ‘natural experimental’

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Footnotes:
1 thank John Newman and Sally Rice for their kind invitation to CSDL 2004, and also the audience for their interesting questions in the discussion which followed the oral version of the paper. I would also like to thank Rachel Nordlinger, Peter Hurst, Alice Gaby, Ruth Singer and Ekkehart König for key discussions on the typology of reciprocals, the Australian Research Council for its financial support of the project Reciprocals Across Languages, and the Alexander von Humboldt-Stiftung for a fellowship that supported part of the writing up of this paper. Finally, I thank Chis Kia, Netta Loogatha and Maki Purti for supplying material on their respective mother tongues: Golin, Kayardild and Mundari.
2 Len Talmy’s monumental two-volume *Towards a Cognitive Semantics* (2000) associates the ‘conceptual approach’, and more particularly ‘cognitive semantics’, with ‘the patterns in which and the processes by which conceptual content is organized in language’ or, put more simply, ‘to address how language structures conceptual content’ (p. 2). Obviously this is a goal virtually
method in a similar sense to natural sciences like biology or geology. A systematic study of the wealth of variation we find in the world reveals the full dimensions of the ‘design space’ of possible phenomena we are interested in, as well as the functional and historical links between different points in this ‘possibility space’. Though typology has the disadvantage that we cannot manipulate the variables experimentally, it has the advantage that the rich fund of six thousand known human languages (past and present) hold many surprises whose existence may get overlooked in designing controlled experimenta-
tion—or a priori logical schemas, for that matter.

The chief difference from the biological or geological sciences is that, in linguistic typology, what we study are ‘objects of the third kind’ (Keller 1994, 1998) that emerge as the unintended outcomes of intentional human behaviour—like shortcut paths across lawns, even-length supermarket queues or free-market economies. No intentionality at all is involved in ‘objects of the first kind’, like eyes or nervous systems, which are found in nature, while in ‘objects of the second kind’, like cathedrals, string quartets, or conferences, deliberate intention and planning is dominant in the shaping of structure. In human languages, intention is ever present, but not usually focused on achieving the structures we get. We may aim to persuade, amuse, or sound like members of the same social group as our interlocutor, and more generally to convey our messages with the right degree of precision and the least amount of effort to other human communicators who think and talk more or less like us. However, we do not aim to end up with accusative case markers, SOV word order, or verbal inflections that indicate reciprocal action.

Linguistic typology, then, can be conceived of from one angle as a way of systematizing the very different structural outcomes, in the form of lexico-grammars, that emerge from human intentions to communicate. My topic in this paper—the unusual structures that languages develop for encoding reciprocal scenarios—examines the wide range of grammatical outcomes that our thousands of human languages have evolved as humans in different times, places and cultures have sought to portray reciprocity in streamlined but semantically sensitive ways. In the ‘reciprocal gallery’ of our grand typological museum, it will mostly be the grammatical constructions that are our exhibits as we hold the meaning (roughly) constant, focusing on situations where X does something (V) to Y, and Y does V back to X. However, from time to

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identical to what I have sketched for semantic typology, but at least on the basis of Talmy’s further remarks, there is a difference in focus: ‘cognitive semantics centers its research on conceptual organization, hence, on content experienced in consciousness. That is, for cognitive semantics, the main object of study itself is qualitative mental phenomena as they exist in awareness’. Semantic typology, on the other hand, takes as its primary object of study the linguistic structures themselves and the meanings they express—and these are social rather than individual phenomena. The relation to concepts used by individuals is, for semantic typology, a secondary though of course vitally important question.
time, because there are in fact interesting variations on this theme, the meaning will again become the exhibit: Is the reciprocating action simultaneous? Are there more than two reciprocants, and if so, do they all reciprocate with everyone else or in some other pattern?

The work I shall be reporting on draws on the emerging findings of a large-scale cross-linguistic project, Reciprocals Across Languages.\(^3\) We use a number of methods to gather cross-linguistic information: (a) material in grammatical descriptions, (b) elicited material based on descriptions of 64 short videoclips depicting a range of differently configured reciprocal events, and (c) a corpus of parallel translations. In this paper I will mainly be drawing on (a), with some material from (b).

1.1 Degree of Cross-linguistic Variation in ‘Cuts’ to Reality

An important pattern that has emerged from studies in semantic typology over the last few decades is that the degree of cross-linguistic variation—and, by inference, the amount of influence culture has upon human conceptualization—varies greatly with the semantic domain, something we can summarize schematically in Figure 1.

![Figure 1. Degree of cross-linguistic variability for some sample semantic domains](image)

In the structuralist heyday seventy years ago, when it was believed that languages varied freely and without limit, this was not what the field expected. Since then, such important studies as Berlin (1992) for ethnoclassification or Berlin & Kay (1969) for colour terms (see Foley 1997 for a good survey and references) have revealed striking parallelisms in how languages categorize certain domains of vocabulary. In the case of colour terms, the parallelisms have been attributed at least in part to structural constraints on perception in our nervous system, in particular the maximal receptivity of receptor cells

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at certain frequency wavelengths. In the case of plant and other ethnobiological terms, the most dominant causal factor for cross-linguistic conceptual parallelism is claimed to be the bundling together of various morphological attributes—size, shape, colour, etc.—in objects in nature, so that it becomes natural to carve the biological world at its joints in particular ways. Rosch (1977), in studies of human concept formation, argued for similar views with regard to artefact names. Emotion terms, though they exhibit a significant amount of cross-linguistic variation, nonetheless show significant similarities despite the existence of many subtle cross-linguistic differences (see Harkins & Wierzbicka 2001).

Studies of kinship terms, long a staple of cognitive anthropology (see, for example, D’Andrade 1995, Evans 2001), have revealed a much greater deal of variability. Consider the treatment of three ‘parent-generation male’ terms, those for father, father’s brother, and mother’s brother. Languages may merge all three (as male members of the first ascending generation); they may, as in English, oppose the first (father) to the other two (uncle), thus opposing ‘lineal’ to ‘collateral’ relatives; or they may merge ‘father’ and ‘father’s brother’ and oppose it to the maternal uncle, opposing ‘patrilineal’ to ‘non-patrilineal’ males of the first ascending generation.4

Perhaps because the complex categories we use in reckoning kinship are evolutionary latecomers compared to those we need to categorize colours or natural species, we appear to have a much greater cross-linguistic flexibility in the concepts that languages lexicalize in this domain. Nonetheless, the results delivered to us through wide-ranging cross-linguistic studies show that it is by no means open slather, as can be seen from the famous study of sibling terminology by Nerlove & Romney (1967). They examined 245 languages for the patterning of terms across the eight logical kin types given by the product of sex of ego x sex of referent x relative age. There is certainly a great deal of cross-linguistic variation here, and English speakers take some time to get used to systems like Kayardild, for example, with terms like kularrinda ‘opposite sex sibling’ (i.e. sister for a man, brother for a woman) or duujinda ‘younger same sex sibling’ (i.e. younger brother for a man, younger sister for a woman). Strikingly, though, they found that of the 4,140 logically possible types only ten were attested in more than one language of the sample. Common patterns are the use of a single term (‘sibling’) for all eight kin-types, and the division into two terms based on sex of referent (as in English brother vs. sister). So, though there is a great deal of cross-linguistic variation, it is far from unconstrained.

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4 Though none appear to merge father and mother’s brother, opposing it to father’s brother, a fact originally noted by Greenberg (1980), this is most probably because there is no feature that would allow us to set up a non-disjunctive category here.
It is becoming clear that the semantic domain which is most ‘miscellaneous and gerrymandered’ is that of event terms, where work by Talmy (1985, 2000) in particular has shown us just how variable languages can be in this semantic domain. Moreover, Gentner (1982) has pointed out that the lack of ‘natural partitioning’ of discrete referents (for what has sometimes been called *eventities*) makes for much slower learning of labeled categories by children than is the case for the objects denoted by nouns. The lexicalization of event-denoting expressions has thus emerged as the domain with the most extreme cross-linguistic variation. This makes the mapping between the semantic level of ‘event’ and the syntactic level of ‘clause’ one of the greatest challenges to semantics, syntax and typology.

1.2 Special Characteristics of Reciprocal Events⁵

One dimension of the lexicalization of events problem is working out how much complexity, in terms of event structure, can be accommodated within a single clause. Cross-linguistic studies of causatives, benefactive and instrumental constructions, and motion events have shown us that single-clause English expressions like *I dropped the cup*, *I baked Mary a cake*, *I cut the bread with a knife* and *The ball rolled down the hill* are all syntactically decomposable in some languages into multi-clause expressions of the type *I made/let the cup fall, I baked cake gave Mary*, and *The ball descended the hill, rolling*. A wide range of languages employs such strategies, through methods like syntactic causatives, serial verb constructions, or manner-framing. Typological work here has taught us a great deal about how to motivate complex syntactic behaviour from the semantics of event decomposition. My main focus here will be on another type of complex event for which most natural languages provide specialized descriptors, such as the English reciprocal construction with *each other/one another*. These are illustrated by (1a) and (1b).

(1)

a. John and Mary love each other/one another.
   love (j, m) & love (m, j)

b. John and Mary groomed/massaged/deloused each other/one other.
   [delouse (j, m)]₁ & delouse [(m, j)]₂

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⁵ More precisely: of events described by reciprocal constructions in some languages. See König and Kokutani (forthcoming) for arguments that the term ‘reciprocal’ should be reserved for linguistic forms/constructions, not for the events they describe. But since we want to hold the event constant and examine how it is expressed in different languages, and since they will not always be strictly ‘symmetric’, we will continue to use the term ‘reciprocal events’.
Note that here we are actually dealing with two related subtypes, since in (1a) we have a ‘simultaneous reciprocal’, with both predicates being true at the same time, while in (1b) we have a ‘sequential reciprocal’, in which one event occurs first, followed by the other. Though the difference between these types is not the focus of this paper, there are languages that distinguish the two types with separate constructions, such as Marrithiyel (Australian, Western Daly; Green 1989). Though reciprocal meanings are generally characterized along the lines given in (1a, 1b) [see, for example, Nedjalkov 1991], I will be developing the argument that, at least for events involving human reciprocity, we should also add a further semantic component specifying their mutual intent to cooperate and/or reciprocate, something like ‘do together (j&m)’, which is now a one-place predicate with a plural argument. This move may help us to motivate certain widespread grammatical features of reciprocals that we shall examine below.

Overall, reciprocal constructions have three unusual and interconnected properties, of which only the first is shared with causatives, applicatives and other constructions more widely studied from the angle of clause union: (a) a single clause is used to represent two (or more) events; (b) the thematic roles of (two of) the participants in these events are permuted; and (c) as a result, there is a double linking of thematic roles to argument position, as illustrated in (2).

\[
\text{John and Mary} \quad V \quad \text{each other / one another.}
\]

This makes reciprocals special for any semantic typology of events. This is partly because of their general complexity (i.e., there at least two sub-events, possibly three if one adds a ‘do together’ component), though this is shared with some other complex events, such as benefactives and causatives. What is specific to reciprocals, making them perhaps the most complex event type to be expressed by regular grammatical means, is the resultant complex mapping between (two overlaid) thematic roles and argument positions, all in a single clause.\(^6\) As a result, it is neither the case that each participant projects to a

\[^6\] Distributives, of the type Each child kissed their mother goodbye, run a close second and, in some languages such as Madurese, are constructionally related to reciprocals (Davies 2000). Though the referential instantiations of each role climb out across their respective sets (Tommy, Mary, Melissa; Tommy’s mum, Mary’s mum, Melissa’s mum), the roles are held constant for each argument position and do not cross over the way they do with reciprocals. Tommy, Mary and Melissa are always kissers, and their respective mothers always kissees.
unique syntactic role, nor that each syntactic position is uniquely associated with a single thematic role. The challenges that this problem poses to easy encoding gives rise to an enormous amount of cross-linguistic encoding, as we shall see.

2 Some General Dimensions of Variation for Event-Denoting Expressions

Before we return to reciprocal constructions, it will be worthwhile surveying some of the ways in which languages can differ in how they carve up real-world happenings into event-denoting expressions. In §2.1, I look at four important factors: the defining focus of the event, the partitioning between predicate and argument, the construal of thematic relations, and then—most germanely to our interests here—the complexity of the event.\(^7\) In §2.2, I mention some of the main strategies that languages have for dealing with complex events, and in §2.3, I outline some common strategies for solving the engineering problem of mapping more than one proposition onto a single clause.

2.1.1 ‘Defining Focus’ of Event

Most events have several identifiable phases and languages may differ in what they take as the type-defining phase. Consider the verb *xoj* in Tzotzil (Mayan, Mexico: De León 2001), which means ‘cause an elongated object to end up encircled by a ring- or tube-shaped object’. This would be used in such situations as putting a ring *on* a pole or a pole *through* a ring; putting an arm *into* a sleeve or a leg *into* a trouser-leg, or putting a coil of rope *over* a peg. Compared to English, this Tzotzil verb focuses on the end-state, but ignores the manner of producing it. Likewise, it ignores the question of which object needs to be moved to produce this end-state: the ring or the pole.

Even where the same event is lexicalized across many languages, the many components of the event may not all be equally obvious to linguistic enquiry when viewed through the lens of a single language. Combining evidence from different languages, each giving evidence for the presence of a subset of the components, is a powerful means of producing a detailed cross-linguistic portrait of the event’s full semantic complexity. For a good example of the harnessing of semantic typology to such a goal, see Newman’s (1998) study of ‘give’ across languages. We shall down on this ‘cumulative portrait’ logic in examining the semantics of reciprocals below.

\(^7\) For a more detailed treatment than is possible here, see Talmy (2000) or Croft (1990) and, from a more formal angle, Tenny & Pustejowsky (2000).
2.1.2 Partitioning Between Predicate and Argument

Languages give varying answers to the question so beautifully posed by W.B. Yeats—‘How can we know the dancer from the dance?’\(^8\) Compare the English sentence in (3a) with its translation into Dalabon, a Gunwinyguan language of Central Arnhem Land (3b); in Dalabon and its neighbour Bininj Gun-wok, there are distinct verbs for the hopping of each type of macropod (including distinct verbs for the male and female adults).\(^9\) The specification of macropod species may thus be done through the verb, through the noun, or both.

(3)  
\[\text{a. } I \text{ heard/saw a riverine wallaby hopping along.}\]
\[\text{b. } Nga-h-wona-ng } /\text{nga-h-na-ng } /\text{ka-ye-lurhlurhlmu} \\
1/3-\text{Ass-hear-PP } /1/3-\text{Ass-see-PP } /3-\text{SUB-hop(riv.wall):PR}
\]
\[\text{nunh buladjbuladj, }\]
\[\text{DEM riverine wallaby}
\]
\[\text{‘I heard the hopping of a riverine wallaby.’}\]

Note that there is an important difference here in the presentation of inferences about what is what in the world. The English formulation implies a direct perception of the relevant entity, i.e., we know it is a riverine wallaby, independently of how it is hopping. The Dalabon formulation, on the other hand, implies that we can directly perceive the relevant action type (here, the distinctive hopping gait) and then only in a subsequent inferential step work out that it is a *buladjbuladj*. Interestingly, informal discussions with speakers of these languages suggest that the gait is in fact the most reliable way of identifying the distinct species.

In this example the ‘dancer’ is put into the ‘dance’ expression by means of a distinct verb lexeme. But languages may also compose event-descriptions more systematically by means of ‘instrumental’ affixes on verbs. These are most famous in a number of North American languages (see Mithun 1999:119-26), but are also found in Australian languages like Ngiyambaa (Donaldson 1980), and in several Austronesian languages of Melanesia, such as Dawala (Papua New Guinea—Ezard 1978) and Tinrin (New Caledo–

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\(^8\) Again, see Talmy (2000:45-6) who discusses the difference between ‘object-dominant’ languages, like English, and ‘action-dominant’ languages, like Atsugewi, which would represent the event-dissection manifest in English *There’s a rope lying on the ground* with Atsugewi *waswalak a*, which he renders as ‘it gravitationally-linearizes-aground’, based on the verb root –swal– ‘for a flexible linear object to move/be located’.

\(^9\) See Evans (1998) for more details; I thank Murray Garde by first bringing this problem to my attention with details of the Kuninjku verbs in the dictionary of various dialects of Bininj Gun-wok that he is currently preparing.
nia—Osumi 1995). A distinct twist, found in many Australian languages of the Daly River region, is to use individual auxiliary verbs for comparable meanings, as in Ngan’gityemeri—see Reid (2003).

2.1.3 Construal of Thematic Relations in Events

Languages may also differ in the role they construe participants as playing, which then has repercussions for how the event-denoting predicate is depicted. Consider the issue of when to impute a causal or agent role to events. In general, English tends to project humans as agents or causes, mapping them onto subject roles; this tendency has become stronger and stronger in the history of the language. In Ilgar, Iwaidja and Mawng, however—two languages of the Iwaidjan family in northern Australia—the most common type of lexicalization simply follows the chain of causation, with the result that non-human causes often get projected as subjects (see Evans 2004 for more discussion). This is illustrated in examples (4a-c).

(4) a. \textit{Nga(n)-ni-ma-ny} \textit{wunyarru}. \\
ILG 1OBJ-3ERG-get-PST sickness \\
‘I got sick.’ \\
[Lit. ‘sickness got/caught me’]

b. \textit{awu-ni-waywu-ning} \textit{parak}. \\
MAW 3PLO-3MASCA-take.under.full.sail-PST.IMPF far \\
‘They sailed a long way before the wind.’ \\
[Lit. ‘(the wind) took them way along’]

c. \textit{ma-ni-mirlkpungany} \textit{nuyu} \textit{mata} \textit{mali}. \\
MAW 3.VEG.O-3MASCA-turn.over.PRES to.him VE:ART thought \\
‘He remembers it.’ \\
[Lit. ‘(the memory of the) ceremony) turns his thoughts over’]

d. \textit{k-iny-nga-rajp-u-n} \textit{jita} \textit{manpiri}. \\
MAW PR-3FO-3FA-frustrate.egg.laying-PR DEM greenback.turtle \\
‘That greenback turtle tried to dig a hole to lay eggs but couldn’t.’ \\
[Lit. ‘it (the hard sand) frustrated the turtle’s attempts at egg-laying’]

For each of these, I first supply the most natural sentence-level translation into English (which here always has a human or animal subject), followed by a more literal translation following the argument construal in the original. Usually this sounds rather unnatural in English. The point is that, although these are the best translation equivalents in terms of describing the same event in the real world, the English translation implies a causal analysis imputing a degree of action-initiation to the human or animal, whereas the Iwaidja, Ilgar or Mawng equivalents merely follow a chain of causation that in each case, here, begins with an inanimate. In (4b), for example, the English translation
stresses the role of the sailor in, at the very least, maintaining a certain angle of the sails to the wind, whereas its Mawng equivalent stresses the motive force of the wind. Finally, in (4d), the English translation stresses the role of the turtle, in trying to dig a hole for its eggs (without success, as it turns out), whereas the Mawng version stresses the causal role of the hard sand in frustrating the turtle’s attempts to dig.

2.1.4 Event Complexity

Few event types cannot be analysed into smaller sub-events. Languages differ greatly in how far they bundle together a number of distinct event components into a single lexeme. English tends to lexicalize complex macro-events, whereas the tendency in many highland Papuan languages, such as Kalam, is to break events down into their smallest possible sub-events. These lead to striking cross-linguistic differences in the degree to which, at the levels both of the verb lexeme and of the clause, sequences of sub-events get assembled into events. Consider the following example, discussed in Pawley (1987, 1993), which in English is expressed in a single clause comprising a single verbal predicate (in bold) plus two prepositional predicates (in italics):

(5) The man **threw** a stick **over** the fence **into** the garden.

Its Kalam equivalent in (6) employs four verb roots distributed over three clauses:

(6) *b* mon-day *d* yok-e-*k* waty at

*am*-b *wog-mgan* *yow*-p

go-PERF.3SG garden-in fall-PERF.3SG

[Lit. ‘The man took the stick and threw it, it went over the fence, it fell in the garden.’ 3 clauses; 4 lexical verbs]

Likewise, the English verb gathers in (7) gets rendered into Kalam with a string of five verbs as in (8).

(7) Next morning he **gathered** firewood.

(8) *Mnek* am mon *pk* d *ap* ay-ak

next.morning go wood hit get come put-3SG.PST

[Lit. ‘The next morning, he went into the woods, hit (wood), got (it), came (back), and put (it down).’ 5 lexical verbs]
For a final example, consider the deceptively simple English verb *massage*. Its Kalam equivalent employs a collocation of nine verbs: *pk wyk d ap tan d ap yap g* -, literally ‘strike rub hold come ascend hold come descend do’.

The four dimensions we have just been examining—event-defining focus, argument/predicate partitioning, argument construal, and event complexity—do not exhaust the dimensions of variability we find in event encoding across languages. Also relevant are, inter alia,

- superordinate event classification; how events are classified into superordinate categories, in languages that form event expressions from two parts, an event-classifying auxiliary and a more specific coverb—see especially McGregor (2002);
- division of motion and location events into figure, ground, path, manner (see Talmy 1985, 2000); this is probably the area of event typology that has received the most intense investigation;
- holophrasticism: in the case of languages with holophrastic expressions, such as ideophones or expressives,\(^\text{10}\) that present events as undifferentiated gestalts like ‘sound of rain on roof’ or ‘smell of rotten fruit fallen on ground’, what are the possible semantic assemblages that turn up as gestalts?

We will not attempt a complete typology of these dimensions here. Instead, we return to the dimension of event complexity and examine in more detail some of the strategies that languages adopt for dealing with them.

### 2.2 Strategies for Spanning Complex Events

Events may be complex in many ways; for example, they may involve the repetition or iteration of a similar action with similar personnel (e.g., *they kept taking their pyjamas out of their suitcases*) or of similar actions with different personnel distributed over the same thematic roles (e.g., *each kid gave their mother a laurel wreath*). Here, though, we focus on the role-heterogeneous complex events, where the thematic roles of the sub-events are not comparable—e.g., where a participant is the patient of one sub-event and the agent of another.

#### 2.2.1 Semantically Complex Verbal Lexemes

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\(^{10}\) The terms ‘ideophone’ and ‘expressive’ reflect a difference in descriptive traditions—respectively those of Africa and Asia—more than real differences in linguistic behaviour. The term ‘mimetic’ is also used in discussions of such languages as Japanese. See Nichols et al. (1994) and Voeltz & Kilian-Hatz (2001) for discussion and many nice descriptions of individual systems.
The first strategy has already been illustrated in (5)-(8). A language may have a large number of simple verb lexemes denoting complex assemblages of sub-events. A classic example is English kill and its translations in many other languages via morphological causatives, e.g. Turkish öl-dü ‘kill’, the causative of öl- ‘die’. Other English examples are bring (either ‘come with’ or ‘take come’ in many languages), ambush (‘appear’ plus an applicative in Dalabon—see below), or serenade (‘sing for’).

### 2.2.2 Valency-increasing Strategies

Valency-increasing strategies build ‘transparent complexity’ in the verb. The two chief types are causatives, which add an additional causing agent, typically as a derived subject, and applicatives, which add an additional non-agent as some sort of derived object. Causatives, when they add a causal agent, are faced with a crowding problem in that there are two entities—the original agent and the added causer—competing for the subject slot. The most common solution to this problem is to demote the original agent to some sort of object role, as in Japanese (9a) and (9b):

\begin{align*}
\text{(9) a. } & \text{Kodomo wa tat-ta.} \\
\text{JAP} & \text{child TOP arise-PST} \\
& \text{‘The child stood up.’}
\end{align*}

\begin{align*}
\text{(9b) } & \text{(Boku wa) kodomo o tat-ase-ta.} \\
\text{JAP} & \text{I TOP child OBJ stand-CAUS-PST} \\
& \text{‘I stood the child up, I made the child stand up.’}
\end{align*}

Applicatives add participant complexity at the other end of the role and grammatical relations hierarchies by adding one or more non-agent participants and mapping them onto object-like grammatical roles. In Dalabon, for example, the basic (intransitive) verb burlhmû ‘appear’ can have a goal argument added by the ‘benefactive’ applicative, which adds an indirect object mapped onto the object pronominal slot, as for bunu in (10b). It can also add an ‘accompaniment’ argument by the ‘comitative’ applicative, which then enables the new derived object to be incorporated, as in (10c), and at the same time is mapped onto the object pronominal slot, though in this case the third singular non-human object is simply realized as a zero. It is also possible to combine both applicatives, as in (10d). In such cases, as is normal for three-place verbs in Dalabon, the indirect object occupies the pronominal clitic slot (bunu) and the (derived) direct object incorporates.

\begin{align*}
\text{(10) a. } & \text{biy ka-h-burlhm-inj} \\
\text{DAL} & \text{man 3-Ass-emerge-PST.PERF} \\
& \text{‘A man appeared.’}
\end{align*}
b. biy bunu ka-h-marnû-burlhm-inj
   DAL man 3DUO 3-Ass-BEN-emerge-PST.PERF
   'A man ambushed them two, appeared to them two.'

c. biy ka-h-kanj-ye-burlhm-inj
   DAL man 3/lowerO-Ass-meat-COM-emerge-PST.PERF
   'A man turned up with meat, brought meat.'

d. biy bunu ka-h-marnû-kanj-ye-burlhm-inj
   DAL man 3DUO 3-Ass-BEN-meat-COM-emerge-PST.PERF
   'A man brought meat to the two of them.'
   'A man brought the two of them meat.'

2.2.3 Predicate Chaining

Predicate chaining is another very common strategy for dealing with complex events. This may involve verb serialization, as with the Kalam examples above, or the use of prepositions, as with the English example in (5). This strategy allows the increased number of participants in complex events to be farmed out to different, simpler predicates each taking only a subset of the total participant roster.

2.3 An Engineering Problem in Event-complex Clauses.

As more complex events accrue more thematic roles, it gets harder to ensure a clean projection to syntactic relations (subject, object, etc.). There is a musical chair phenomenon as several participants compete for the same syntactic role. Moreover, there needs to be consistency in role projection. When several sub-events get integrated into a single clause, the grammar needs to ensure that each thematic role clearly projects onto one syntactic relation. For example, if a language breaks he chops the tree down into ‘he chops the tree, it falls’, there is a potential conflict between the semantic and syntactic role of ‘the tree’ in the two predicates, that can be resolved by:

(a) keeping the clauses distinct, so that the same participant can have a different role in each clause: ‘he chops the tree; it falls’;
(b) finding a common (macro-)role that can underlie the integration of two verbs, as in, e.g. Acehnese (Durie 1985), where syntax is organized around the two macro-roles of ‘actor’ and ‘undergoer’ rather than ‘subject’ and ‘object’. Clauses can have either, or both, but there is no macro-role that all clauses must have (unlike with ‘subjects’ in languages with better known patterns of syntactic organization). This means that, unifying the above chain as ‘he<actor> chops it<undergoer> falls’, the common argument ('tree') is undergoer of both chained verbs and thus the two predicates can be serialized in a larger structure without forcing an incompatibility in the syntactic roles associated with the shared argument;
having a role hierarchy that linearizes complex roles into one dimension, e.g., ‘causer’ projects to subject ahead of ‘agent’ in causativized transitives. Japanese, and many other languages (e.g. Turkish) that permit complex derived causatives adopt this strategy. This means that the same linear hierarchy that places agents ahead of patients for the subject slot in transitive clauses like (11a), can be used to place ‘causers’ even higher, above the original agent, when complex events involving one person causing another person to do something to something are represented with a single clause. The ‘demoted’ agent, bumped out of its first-choice subject slot, now needs to occupy a different grammatical role, such as indirect object, as in (11b).

(11) a. Taroo ga nattoo o tabe-ta.
   Taroo NOM fermented.soy ACC eat-PST
   ‘Taroo ate fermented soy beans.’

   Transitive:
   Subject (NOM)          Object (ACC)
   Agent                  Patient

b. Taroo ni Reiko ga nattoo o tabe-sase-ta.
   Taroo DAT Reiko NOM fermented.soy ACC eat-CAUS-PST
   ‘Reiko made Taroo eat fermented soy beans.’

   Causativized transitive:
   Subject (NOM)  Indirect Object (DAT)  Object (ACC)
   Causer        Agent                    Patient

These strategies for handling participant roles in complex events are well known in the linguistic literature and any formal theory worth its salt has ways of handling them. Note that both argument-sharing and linearization of the Japanese type are ways that we can associate a single argument position with two somewhat independent semantic roles. In (11b), for example, Taroo is both an agent (w.r.t. eating) and a patient (w.r.t. his interpersonal interaction with Reiko). And when argument-sharing occurs in verb-serialization, the shared argument may simultaneously be, for example, a patient (w.r.t. being chopped) and a theme (w.r.t. falling).

However, none of these engineering solutions works once we encounter reciprocal clauses. This is because, as mentioned in §1.2, there is a crossover in the linkage between (at least) two entities and two participant roles. Once we get this sort of role-exchange, it is no longer possible to use linearization, or a single ‘shared’ argument, to indicate the special dual-role status of one argument (Taroo, the coconut). This is because each argument has the same double thematic role.
3 Strategies for encoding reciprocal events

Reciprocal constructions, then, are a further type of complex event that maps to a single clause in English, as in many other languages. Their semantic characterization, as we have seen, requires (at least) two propositions. The meaning of *John and Mary kissed each other* will be represented, logically, by the conjoined propositions ‘John kissed Mary and Mary kissed John’, with symmetric exchange of referents between argument roles. In addition, there are many reasons to regard the meaning of reciprocals as including a third proposition as well, referring to the cooperation or mutual orientation of the two participants. Yet little work on the syntax of reciprocals has sought to ground the unusual syntactic features of these clauses in their complex event structure, in a way that relates reciprocals to other typological work on causatives, benefactives and motion-event-decomposition in ‘event-atomizing languages’. This is despite the fact that many languages that employ verb-chaining for complex events also use this strategy for reciprocals. For example in Golin, a Chimbu language of the Papuan highlands, the same overall strategy that produces multi-verb representations for benefactives or motion events does the same for reciprocal situations, by reporting them as complex symmetrical pairings of sub-events.

I will now discuss a selection of reciprocal encoding strategies, taken from a range of languages that exhibit various types of perturbations in their clause structure. These perturbations appear to result from an ‘overlay’ of symmetrically mirrored events. The perturbations include apparently contradictory signs of transitivity, apparent violations of principles producing a one-to-one mapping of NPs to thematic role, ‘sesqui-clausal’ constructions that appear to hover between one and two clauses in size, and violations of binding conditions through the use of non-anaphor pronouns in the same clause as their antecedent.

3.1 Monoclausal Strategies

Most of the familiar types of reciprocal construction are monoclausal, so we start with these. Note that I give a partial list only for reasons of space. For a more comprehensive typology see Evans (to appear). For example, I will not discuss bound reflexive/reciprocal clitics, such as the Romance *se/si* type exemplified by French *Ils se regardent* ‘they look at one another/themselves’.
3.1.1 Reciprocal Anaphor—Filling the ‘Lower’ Syntactic Argument Position

A common way of forming reciprocals is to conjoin the reciprocants, have a conjunct noun phrase or pronoun representing the complete reciprocant set in the ‘higher’ position, and employ a ‘reciprocal anaphor’ (often called a reciprocal pronoun) in the ‘lower’ argument position. In reciprocals formed from transitive verbs like love in English, as in (1) above, the subject is represented by a conjunct NP (John and Mary) while the object is represented by the reciprocal pronouns each other or one another. The normal syntactic analysis of such expressions is that they are NPs. Support for this comes from the fact that, like regular NPs, they can form the basis for possessive expressions, as in (12), and they can be conjoined with regular NPs, as in (13).

(12) A new report on the state of language teaching in France and Germany shows that the grasp of each other’s languages is in decline. Guardian Weekly, Feb 19-25 2004: 1, TEFL Supplement.
(13) ...businesses competing to sell their wares to each other and consumers... Guardian Weekly, Sept 24-30 2004: 8, Trade Justice Supplement.

For many languages the analysis of reciprocal pronouns as NPs is quite unproblematic. This is especially the case for languages in which the reciprocal pronoun has just one basic element, either inflected for person, as in Hausa, or accompanied by a possessive pronoun, as in Welsh in (14). Typically these expressions originate as words meaning ‘friend’ or ‘companion’, via a distributive implicature across equivalent participants. The example in (14) is etymologically equivalent to ‘they walked straight past their fellow’.

(14) Naethon nhw gerdded yn syth heibio i’w gilydd. WEL: AUX.3PL.PST 3PL walk in straight past to 3PL RECIP ‘They walked straight past each other.’

However, in languages with binomial reciprocals like English each other or Russian druga, the situation isn’t quite so straightforward. This is par-

---

11 Different theories give different accounts of what ‘lower’ means in connection with anaphor—in terms of structural configuration in the GB tradition and in terms of a mixture of thematic hierarchies and functional structures in the LFG tradition (Bresnan 2000). These issues are irrelevant to the current discussion and I avoid them here.

12 Within the reciprocals literature it is not always clear what is included under the term ‘reciprocal anaphor’, since some authors apply it to all relevant reciprocal formatives. I will thus stick to the term ‘reciprocal pronoun’ for NP-like free expressions specialized for expressing reciprocal meanings. This overall term then has various subtypes (such as ‘binomial reciprocal pronouns’ in the case of each other).
particularly clear in languages which use case or prepositions to indicate grammatical relations. Consider the Russian expressions in (15a) and (b). The second element takes the case appropriate to the verb’s case frame. If the verb is transitive, it takes the accusative, as in (15a); if it is semi-transitive (the verb *pomogat’* subcategorizes for the dative), it takes the dative, as in (15b). When the verb assigns a preposition to its complement, this is placed between the two elements, governing an appropriate case on the second but leaving the first unchanged, as in (15c), contrasting with English where the preposition precedes the whole complex.

(15) a. Oni *vide-i* *drug* *drug-a*.
RUS 3PL.NOM see-PST-3PL other other-ACC ‘They saw each other.’

b. Oni *pomoga-i* *drug* *drug-u*.
RUS 3PL.NOM help-PST-3PL other other-DAT ‘They helped each other.’

c. Oni *nadejutsja* *drug* *na druga*
RUS 3PL.NOM rely.on.3PL other on other-ACC ‘They rely on each other.’ (Nedjalkov 1991)

[verb subcategorizes for preposition]

Note, though, that in all these examples the first word remains invariant (*drug*). An analysis that suggests itself is to treat *drug* as being in the nominative (since nominative suffixes are zero for this nominal class), but then we would have a problem. NPs are supposed to receive just a single case, according to all theories of case assignment, but then the two elements within the NP would receive different cases (nominative and either accusative or dative). An alternative is simply to say that the first element is fixed; i.e., that it is uninflecting rather than nominative. This is plausible, given that conceivable methods of trying to get a non-nominative subject and hence a non-nominative first element fail to induce any change in the first element, *drug*, e.g., using a dative-subject verb, like ‘they like each other’, or by setting up the reciprocal expression between an object and a complement (‘they introduced the two of them to each other’).

If we look at Spanish, however, we get evidence of differential case-like assignment to the two elements. Normally, binomial reciprocal pronouns in Spanish take the form *otro* (PREP) (*ART*) otro, where the suffix on *otro* is given by the number and gender of the partitioned reciprocants, as in (16a). This is like the Russian situation: A preposition before the second element of the binomial is comparable to the Russian use of case and/or preposition. But in sentences where the reciprocal relation holds between thematic roles, neither of which is a subject, and with both human, as in (16b), we see that each ele-
ment bears an overt and different preposition for its role: a for the (human) object and de for the source.

(16) a. No intiend-o la facilidad de los extranjeros
    NEG understand-1SG the ease of the foreigners
    para llamar-se unos a otros sin asomo de temor,
    for call-RR ones to others without sign of fear
    lo cual no sólo es una falta de respeto,
    the which NEG only is a lack of respect
    tambièn puede ocasionar grave-s peligro-s.
    also can:3SG cause serious-PL danger-PL

    ‘I don’t understand the ease with which foreigners address each other without any sign of fear, which is not only a lack of respect, but can also occasion grave dangers.’ (Isabel Allende, Los Cuentos de Eva Luna: Walimai)

b. Todas las naciones se reuniran delante de el,
    all:F.PL the:F.PL nation:PL 3:RR unite:F.3PL before him
    y el separara a unos de otros.
    and he separate:F.3SG OBJ one:M.PL from other:M.PL

    (Matt. 25:32) ‘All the people unite before him, and he will separate one from another’ or ‘he will separate them from one another.’

It is clear that, historically, the two elements of binomial reciprocals were once more independent, each belonging to a different constituent (see Plank, to appear). Through time, the subject-linked element floated rightward and then began to merge with the remaining element, as schematized in (17a-c).

(17) a. each baron fought (the) other
    b. baron(s) fought, each (the) other
    c. (the) barons fought each other

Examples like (16b) and (17b) suggest that, at least in some languages, the two elements of binomial reciprocals retain enough independence, in terms of preposition and case assignment, that each part is linked independently to a different argument position, something like they fought, each <subject> the other <object> or John introduced them each <object> to the other <indirect object/complement>. This leads to the anomaly of a NP comprising two elements each bearing an independent case. The maximally awkward example, for theories of case assignment to the NP, would be one in which each of the two elements are independently assigned a non-zero case, in accordance with the two corresponding syntactic positions.
3.1.2 Reciprocal Particles and Adverbs

A strategy related to the one just discussed involves a particle or adverb with a meaning like ‘mutually’. In Kayardild, where the most common strategy is verbal derivation (see §3.1.3), the adverbial strategy using the reduplicated adverb junkuyunku\(^1\) occurs in situations in which the reciprocated predicate is either a non-verb or when the reciprocant roles are not subject and object (direct or indirect). (18) illustrates the former case; the predicate nominal bayi ‘angry’, as a non-verb, is morphologically unable to host the verbal derivational affix.

(18) Karndi-ya dun-da jungarrba bayi junkuyunku
maze-NOM husband-NOM big angry mutually
maarra miburl-da kurri-nju-n-d
only eye-NOM see-RECIP-NMZR-NOM
‘The husband and wife are very angry with one another, they are just staring at each other.’

A particular interesting case of a language using a reciprocal particle is Savosavo, a Papuan language of the Solomon Islands (Wegener 2005). This language uses an adverbial mapamapa, etymologically ‘person-person’, but synchronically an adverb. No overt NP expresses the object (or other relevant reciprocant) position. The argument registration in reciprocal constructions shows a fascinating anomaly. While the subject has the number appropriate to the full set of reciprocants, the person, number and gender of the object affix on the verb is fixed as third singular masculine:

(19) a. Mapamapa ze-va zua-li-ghu=e
RECIP 3PL-POSSM ask-3SG.MO-NOM=FOC
‘They asked each other.’

b. ..aghe-va mapamapa mata-li-ghu
1DU.EX-POSSM RECIP want-3SG.MO-NOM
‘That we want each other.’

There is thus a contradiction in number between the reciprocant-as-subject, treated as plural (with person, number and gender varying as appropriate) and the reciprocant-as-object, fixed at third person singular.

---

\(^{13}\) Literally ‘straight-straight’, more idiomatically ‘turn and turn about’, ‘in exchange’.

\(^{14}\) The possessum marker here has nothing to do with the reciprocal marker, but is triggered by the nominalized status of the clause, here motivated by discourse purposes.
3.1.3 Verbal Derivation

Another common strategy for forming reciprocals is to add an affix to the verb, forming a new verb with reciprocal semantics. Two examples are the Kayardild reciprocal suffix -NTHu-tha (Evans 1995) and the Mundari reciprocal infix <-pV-> (Osada, to appear). Effectively, this process derives new verbs which could be paraphrased as ‘reciprocally V’, ‘engage in reciprocal Ving’, or ‘share in Ving’.

(20)  

\[ \text{Bil-da miila-thu-n-d.} \]
KAY 3PL-NOM delouse-RECIP-NMZRM-NOM  
‘They are delousing each other.’

[said in a situation where people take turns looking for lice on one another]

(21)  

\[ \text{siku-ko=ko da<p>Ra-ta-n-a} \]
MUN louse-PL=3PL.SUBJ search<RECIP>-PROG.ORIENTED-INTR-IND  
‘They are delousing one another.’

Now it is normally said that languages with such verbal derivations produce intransitive reciprocal clauses, a generalization originally made by Faltz (1985)\(^{15}\), who used the following formula:

(22)  

\[ P(x,x) = PR(x)... \]

This generalization accounts for the fact that Kayardild (20) and Mundari (21) have an apparent valency reduction, by one, in reciprocals. Faltz’s formula suggests a way to ‘save’ thematic uniqueness in languages using this strategy: A ‘merged’ role—agent/patient or whatever the particular thematic combination may be—is linked to a single argument position (e.g. subject). Note in passing that something like this is independently needed to allow the right thematic role to be assigned to the subjects of certain verbs, such as swap.

However, such languages often give rather mixed signals about transitivity once one looks at their syntax in detail, showing conflicting evidence about whether the object is present or not. For example, there are a number of Australian languages where the ergative case is normally only used in clauses with two arguments, while one-argument, intransitive verbs assign the nominative case to their subjects. In some of these languages, reciprocal verbs derived by affix have just a single conjoined argument (and are, thus, apparently intransitive), but allow this argument to take the ergative case, elsewhere only ever

---

\(^{15}\) Faltz’s formulation was aimed primarily at reflexives, but given the many languages that use the same forms (and effectively have the same syntax) for both reflexives and reciprocals—many represented in his important book—it can be taken to apply to reciprocals as well.
found in transitive clauses. Kuuk Thaayorre (Gaby, to appear) is an example of such a language. Note that in (23), *parr-n peln* is a single NP, since pronouns can regularly be combined with nouns within a single phrase.

(23)  
\[
parr-n \text{ peln} \, ii \, \text{waarin-rr} \\
\text{KTH} \quad \text{kid-erg} \, 3\text{pl.erg} \, \text{there} \, \text{chase-recip} \\
\text{‘All the kids are chasing each other.’}
\]

As a second example, consider Kayardild. We saw above that verbs with the reciprocal suffix appear to have their valency reduced by one. Transitive verbs become intransitive when the reciprocal suffix is added, their participants being merged in the subject argument. There is a wrinkle, however, which appears when we look at the treatment of body parts. Kayardild, like many Australian languages, encodes situations in which body parts are involved by lining them up with the arguments denoting the corresponding ‘wholes’. One says ‘I, hand, entered’ for *I put my hand in*, or ‘I touched him, hair’ for *I touched him on the hair* or *I touched his hair*. A normal transitive clause with an involved body part belonging to the object NP, therefore, has the following structure in Kayardild (modal case is a peculiar Kayardild system of marking tense and mood by a special case on the object).\(^{16}\) Because the case of the part is linked to that of the whole, this will give us a sensitive tracing of the presence of objects which may appear, on the surface, to be absent.

\[
\begin{align*}
\text{(24)} & \quad \text{NP}_{\text{<subj:nom>}} \quad \text{V} \quad \text{NP}_{\text{<obj:modal case>}} \quad (\text{NP}_{\text{<obj:modal case>}}) \\
& \quad \text{whole} \quad \text{body.part}
\end{align*}
\]

Consider the following example, in which the verb *darrija* ‘tread on, press with feet’ is applied to the action of a midwife on the belly of a mother due to deliver her child. The case of the object NP is the ‘modal proprietive’ (the case assigned to objects when the clause has ‘potential’ mood) and this is found on the apposed body part NP *bardaka* ‘belly’ also.

\[
\begin{align*}
\text{(25)} & \quad \text{Darri-n-kuru} \quad \text{dangka-a} \quad \text{mirrayala-thu} \\
& \quad \text{tread.on-NMZR-PROP} \quad \text{person-NOM} \quad \text{massage-POT} \\
& \quad \text{darri-ju} \quad \text{maku-walath-u} \quad \text{bardaka-wu} \\
& \quad \text{tread.on-POT} \quad \text{woman-many-MPROP} \quad \text{belly-MPROP}
\end{align*}
\]

---

\(^{16}\) This formulation is simplified for the sake of the exposition; see Evans (1995: Ch. 4) for a fuller description.
‘The person in charge of delivering the baby massages and treads on the women’s bellies.’

Now, in reciprocal constructions, the object NP is suppressed and the clause appears intransitive. However, despite the fact that there is no possible object NP in the clause, apposed body parts on the (suppressed) object still appear in the relevant modal case (26), as if governed by a clausal object. We thus have a discrepancy between what the main arguments tell us is the transitivity of the clause—namely intransitive—and what the apposed body part tells us—that it is transitive.

(26) Dan-da maku-wala mirrayala-thu-th,
KAY this-NOM woman-many.NOM massage-RECIPE-ACT
darri-nju-thu bardaka-wu.
tread.on-RECIPE-POT belly-MPRO

‘These women, they massage each other, they tread on each other’s bellies (to induce labour).’

As a third example, consider Malagasy. The data are from Keenan & Razafimamonjy (2002) and the identification of the discrepancy in clausal transitivity is from the discussion of their data in Hurst (2002). Malagasy is well known as a VOS language, as shown in (27a). Reciprocals take a verbal affix and reduce the valency by one, as shown in (27b), which has no object but a subject conjoining the two actants (Rabe sy Rasoa ‘Rabe and Rasoa’).

(27) a. M-an-aja an-dRabe Rasoa
MAL PRES-ACT-respect ACC-Rabe Rasoa
Rasoa respects Rabe.’ (transitive)

b. M-if-an-aja Rabe sy Rasoa
MAL PRES-REC-ACT-respect Rabe and Rasoa
‘Rabe and Rasoa respect one another.’ (derived intransitive?)

So far, Malagasy appears to be a straightforward case of valency reduction in reciprocals. However, now consider the following object-raising construction for representing reported speech, comparable in structure (though not in the verbs it occurs with) to an English sentence like John believes Mary to have left the country. In Malagasy, the subjects of speech complements can be raised from the actual quoted clause and appear as the object of the main verb of speech, as illustrated in (28), literally ‘Ravelo said Rasoa to have cultivated

17 Hurst’s LFG analysis posits an object in F structure but not in C structure.
rice'. This reported speech object-raising construction is only allowed if the main clause verb has an object.

\[(28) \text{N-i-laza } an-drasoa [ho namboly vary] Ravelo \vspace{8pt} \]
\begin{tabular}{llllll}
\multicolumn{2}{l}{PST-ACT-say} & O-Rasoa & COMP & PST:cultivate & rice \\
\end{tabular} Ravelo \vspace{8pt}
\begin{tabular}{l}
V O \\
[Comp V OJ S] \vspace{8pt}
\end{tabular}
\vspace{8pt}
\vspace{8pt}‘Ravelo said Rasoa cultivated rice.’

Strangely, Malagasy can use this construction where the main clause contains a reciprocalized form of the verb ‘say’, as in (29), even though the clause appears on other grounds to be intransitive, like (27b).

\[(29) \text{N-ifamp-i-laza } [ho namboly vary] Rasoa sy Ravelo} \vspace{8pt}
\begin{tabular}{llllll}
\multicolumn{2}{l}{PST-REC-ACT-say} & COMP & PST-cultive rice & Rasoa \\
\vspace{8pt}
\end{tabular} Ravelo \vspace{8pt}
\begin{tabular}{l}
\vspace{8pt}
\end{tabular}
\vspace{8pt}
\vspace{8pt}‘Rasoa and Ravelo said of each other that s/he cultivated rice.’
\vspace{8pt}
\vspace{8pt}[Lit. ‘Ravelo and Rasoa said of each other to have cultivated rice.’]

If (29) is intransitive, though, how can the reported-speech, object-raising construction be used? Again, we face a conflict of evidence: The overall structure of reciprocal clauses in Malagasy suggests they are intransitive, but their behaviour in the raised-to-object reported speech construction suggests that an object really is still there. (There are other puzzling facts, as well—see the Keenan & Razifamamonjy (2002) and Hurst (2002) articles mentioned above).

In this section, then, we have seen three distinct types of problems regarding the transitivity of reciprocal clauses. In Kuuk Thaayorre, the number of overt arguments in reciprocals suggests the clause is intransitive, while the case on the subject suggests it is transitive. In Kayardild, the number of overt arguments in normal reciprocals likewise suggests they are intransitive, but the behaviour of apposed body parts suggests they are transitive. Finally, in Malagasy, the basic clause structure of reciprocals is that of an intransitive clause, but the possibility of forming the object-raising reported speech construction suggests they are transitive. These are just some of the transitivity-linked discrepancies found in reciprocal clauses; see Evans, Gaby & Nordlinger (submitted) for a more detailed survey.

3.2 Bi- or Multi-clausal Solutions

As seen above, a common strategy for encoding complex event types is to chain two or more predicates together in multi-clausal constructions. In many languages, the coding of reciprocals involves similar strategies, which in fact bring the syntactic representation of the reciprocal closer to its semantic representation in terms of two or more individual predicates with the arguments permuted.
3.2.1 Event Chaining

In Golin (Chimbu family), another Papuan language from the same phylum as Kalam (Trans-Papua-New-Guinea), though not closely related to it, verb chaining is the primary means of representing reciprocal situations, as well as other kinds of internally complex events. Consider (30), which was given in response to the same video clip that elicited Kayardild (20) and Mundari (21) above:

(30) Abal su alemile abal ta gibl-in ig-in
GOL woman two be.standing:SEQ woman one head-3 hair-3
aato-n-g-w-e abal ta kwi abal ta
touch-3-Ass-3-DIST woman one in.return woman one
gibl-in ig-in aato-n-g-w-e eri-n-g-w-e.
head-3 hair-3 touch-3-Ass-3-DIST go-3-Ass-3-DIST

‘Two women are touching each other’s hair.’
[Lit. ‘two women are standing and one woman touches her hair and then in return one woman touches her back.’]

In this case one might object that we are not even dealing with a specialized construction—isn’t this just a case of making a complex description, on a par with any other complex multi-clause description? Note, though, that the use of the adverb kwi ‘in return’ appears to be conventionalized and regularly appears in reciprocal descriptions of this type.\(^{18}\) Nevertheless, Golin clearly shows how some languages do not compress the semantics of reciprocals into a single clause. See Matthews \& Yip (1994) for a description of a similar situation in Cantonese.

3.2.2 Clause Merger

Cross-linguistically, a wide variety of reciprocal constructions originate as combinations of two or more verbs, which through processes of compounding or other types of grammaticalization come to form a single morphological and syntactic unit. Examples include the ‘V-come-V-go’ construction in Mandarin (‘hit-come-hit-go’ = ‘hit each other’), which can have a reciprocal construction in certain contexts (31), the Japanese ‘V-meet’ construction in (32), or the construction found in Yawuru and other Nyulnyulan languages in (33; see also

---

\(^{18}\) In Yidiny (Dixon 1977) the conventionalization of the comparable adverb in a very similar construction is quite clear, since the choice between two ‘in turn’ type adverbs and the clause they are placed in depends on the person of the subject of each clause.
McGregor 1999) which combines a preverb denoting the action with an auxiliary meaning ‘exchange’, thus ‘kiss exchange’ for ‘kiss each other’. In both the Mandarin and the Japanese constructions, grammaticalization has proceeded to the point where the two or more verbs, originally distinct phonologically, have now merged into a single phonological unit. The overall trajectory by which two originally independent lexical verbs fuse into a single phonological unit is very similar to the trajectory that gives rise to applicatives and causatives in many languages, paralleling the way in which grammatical constructions emerge to show both the unit and the internal constituency of these types of complex events through single words comprised of more than one morphemic unit.

(31) Tamen da-lai-da-qu. MAN they hit-come-hit-go ‘They hit each other.’ (Liu 1999: 124)

   b. John to Mary ga ai-si-au-te iru JAP John COM Mary NOM love-do-meet|RECIP-DEP be ‘John and Mary love each other.’


Note that the Mandarin example involves the repetition of the main predicate (‘hit’) paralleling the repetition of the base activity with permuted participant-to-thematic role linkages. The Japanese and Yawuru constructions, on the other hand, reflect a conceptualization in which a further predicate, denoting exchange, convergence or perhaps cooperation, is held to be true of the full participant set. We now turn to a third type of event-chaining reciprocal that appears to do both: It repeats the base event and follows it with an intransitive predicate imputing overall joint action to the full group.

3.2.2 A Problematic Sort of Event Chaining: Amele

In the examples just considered, there is just one lexical verb and a single clause; that is, grammaticalization leads to an outcome where the etymological origins of the construction as containing two or more distinct lexemes no longer cast doubt on the analysis of the construction as having a single verb at the syntactic level. But it may also happen that the individual event-denoting
units remain as distinct phonological words, even though they are nevertheless sufficiently unified constructionally such that their status as distinct verbs is less clear than in the Golin case.

Consider the Papuan language, Amele, again from the Trans Papua New Guinea phylum. In Amele reciprocal constructions (Roberts 1987), at least those formed from transitive verbs, the verb is repeated, suffixed by the different-subject marker and a third singular suffix. In addition, the construction is closed with a final ‘matrix verb’ which ‘cross-references the reciprocant group, which can be dual or plural in number’ (Roberts 1987: 306). Roberts emphasizes the unusual behaviour of the switch-reference ‘different-subject’ marker in this construction: “Both coordinate verbs are marked for third person singular subject and for different subject (DS) following. Therefore they cross reference each other even though they are in linear sequence.” Normally the different-subject marker is only anticipatory, rather than being non-linear as it is in the reciprocal construction.

This construction is illustrated in (34) and (35); I will refer to it as the ‘unified zig-zag’ construction.\(^\text{19}\)

\[
\begin{align*}
(34) & \quad \text{Age get-u-do-co-b get-u-do-co-b eig-a.} \\
& \text{AME 3PL cut-PRED-3SG-DS-3SG cut-PRED-3SG-DS-3SG 3PL-TOD.PST} \\
& \quad \text{‘They cut each other.’ (Roberts 1987: 132)}
\end{align*}
\]

\[
\begin{align*}
(35) & \quad \text{Age age na sab je-ce-b je-ce-b eig-a.} \\
& \text{AME 3PL 3PL of food eat-DS-3SG eat-DS-3SG 3PL-TOD.PST} \\
& \quad \text{‘They ate each other’s food.’}
\end{align*}
\]

How many verbs, and how many clauses, should the unified zig-zag construction be analysed as having? On initial inspection, one would conclude from the presence of inflections normally placed on verbs and on conjoined monovalent clauses, that (34) and (35) have three verbs and three clauses [e.g. jeceb, jeceb and eig-a in (35)]. Against this, though, is some evidence that the agreement-showing verbs are not ‘real’ clauses. This comes from the conventionalization of their person-marking: Whatever the person of the overall subject, that of the ‘zig-zag’ verbs is frozen in the third person:

\[^{19}\text{In the case where the reciprocating roles are agent and beneficiary, a somewhat different construction is used: In addition to a single occurrence of the lexical verb (‘cut’ in (29), the ‘object marker and subject suffixation is duplicated’ (Roberts 1987: 132).}\]

\[
\begin{align*}
\text{Age jacas get-i do-co-b do-co-b eig-a.} \\
& \text{3PL tobacco cut-PRED 3SG-DS-3SG 3SG-DS-3SG 3PL-TOD.PST} \\
& \quad \text{‘They cut tobacco for each other.’}
\end{align*}
\]

This is Roberts’ analysis. However, it may be possible to reanalyse this as reduplication of serialized ‘give’, since ‘give’ is a zero-root verb—see his ex. (634) on the same page. This would make this example, literally, ‘they tobacco cut he.gives.him he.gives.him they are’.
On this analysis there is just a single clause: The person-marking on the first two verbs is frozen and not to be taken as evidence for them being normal, inflected verbs. Although we cannot resolve this issue here, the general point is that Amele’s reciprocal construction, though it appears to contain at least three lexical verbs, has integrated them to the point where they show even less independence than is normal in a verb-chaining construction. In addition, Amele shows particularly clearly that, in addition to representing the individual one-way events normally given in semantic representations of reciprocals, we may wish to add an additional semantic component representing joint action if we take the clues offered by the language seriously. Through its final conjoined-set inflectional complex, Amele provides additional evidence for including a semantic component along the lines of: [X and Y interact/act in a coordinated way to produce the state of affairs described], as schematized in (37).

(37) X and Y act together/do something together
    X verbs Y
    Y verbs X

The Mandarin and Japanese multi-verb-root constructions, on the other hand, each pick out one aspect of this multi-event scenario. Mandarin picks out the successive one-way events, while Japanese picks out the coordination. What is unusual about Amele is that, with its three-verb structure, it represents all three elements at once.

3.3 Another Problem of Clausal Overcrowding: The Iwaidja/Mawng Reciprocal Construction

To close this section on languages whose reciprocal constructions pack in more units than a simple clause would normally be expected to do, let us consider Iwaidja and Mawng, two closely related languages of the Iwaidjan family in Northern Australia (Evans, Birch & Singer, in prep.). The preferred means of representing reciprocal events like ‘They hit each other’ in these languages is to use a construction along the lines of ‘She hit him and he.in.turn’. Historically, this is likely to have originated as a truncated contrastive subject clause not too different from the Golin construction we began this section with—‘she hit him and he.in.turn hit her’. Subsequently, the second verb became ellided, leaving a clause with a dangling contrastive pro-
noun—something like ‘she hit him and he in turn …’—with a one-and-a-half clause (or sesqui-clasural) structure a little like the English construction The consumers distrust the shareholders and vice versa. As a final step, the contrastive-subject pronoun has been integrated into the sole remaining clause. This has now reached the point where it can occur inside other clausal constituents within the tightly-ordered series of elements that directly follows the verb. In ditransitive reciprocals, for example, the contrastive-subject pronoun is placed before the NP representing the direct object. We can represent this construction as follows:

(38) Semantics: \( V \{x,y\} \land V \{y,x\} \)
    
    \[ \text{Subj:}x > \text{Obj:}y – V \quad \text{and} \quad y: \text{Contr} \]

The basic use of the contrastive subject pronoun, outside the reciprocal construction, is to contrast successive subjects undertaking the same or contrasting actions. An Iwaidja example is:

(39) \( \text{ngabi} \quad j\text{-ara-n} \quad \text{lda} \quad \text{jamin} \quad \text{yawurraka} \)

\[ \text{IWA} \quad 1SG \quad 1SG.\text{away-go-pst} \quad \text{beach} \quad \text{and} \quad 3SG.\text{CONTR} \quad 3SG.\text{away-go-home} \]

‘I went to the beach and he went home.’

Its use in the reciprocal construction can be illustrated below. (40a) illustrates the basic construction with a transitive verb, while (40b) and (40c) illustrate the placement of the contrastive pronoun inside other clausal arguments. (40b) is an ‘affected personal domain’ construction, where the ‘personal domain noun’ (here \textit{kurrkbung} ‘louse’) is the grammatical object while the person in whose domain it is located would normally by represented by an oblique pronoun directly after the verb. In the corresponding reciprocal, \textit{lda} ‘and’ plus the contrastive pronoun is placed after the verb but before the object NP. (40c) makes a similar point using a three-place verb (‘give’); again, \textit{lda} plus the contrastive pronoun appears right after the verb, before the NP giving the direct object. Such examples make it clear that, synchronically, we are dealing with a single clause.

(40) a. \( K\text{-aya-n} \quad \text{lda} \quad \text{jamin} \)

\[ \text{IWA} \quad 3\text{FEM.SGA} > 3\text{SG.O-see-NPs} \quad \text{and} \quad 3\text{SG.CONTR} \]

‘They two (including at least one female) are seeing one another.’

[Lit. ‘she is looking at him/her and (s)he in turn’…]

b. \( a\text{-ldindi} \quad k\text{-aya-n} \quad \text{lda} \quad \text{jamin} \)

\[ \text{IWA} \quad 3\text{PL.S-stand:DU} \quad 3\text{FEM.SGA} > 3\text{SG.O-see-NPST} \quad \text{and} \quad 3\text{SG.CONTR} \]

\[\text{For certain person/number combinations the situation is more complex; we abstract away from those here.}\]
**kurkbug**

louse

‘They (two) are delousing one another.’

c.  **anb-aku-n**  **lda**  **wamin**  **a-ngurnaj**

IWA 3PL.A > 3PLO-give-NPST and 3PL.CONTR 3PL-name

‘They used to give each other their (clan) names.’

But if we are dealing with just one clause here, there is a problem for the system of linking rules which project semantic arguments onto syntactic positions. Standard syntactic theories posit a biuniqueness constraint, with various formulations according to the particular theory, but whose essence is to ensure that each semantic argument projects once, and only once, into a clausal position. But what about (40a-c)? In each case, one of the semantic arguments appears twice: first indexed by the object prefix of the verb and then indexed by the contrastive subject pronoun. At the same time, we have a problem in deciding what is the subject. Is it the actant represented by the subject prefix, which would be the normal state of affairs in a Iwaidja or Mawng clause? But, if so, what about the actant represented by **lda jamin** in (40a) and (40b)—in its basic use for contrastive subject clauses, it normally represents the subject? We are left with a situation where the arguments from one and a half propositions are being projected onto a single clause, in defiance of standard constraints on argument projection.

### 4 A Phonological Aside: Concatenative and Overlay Relationships in Phonology

The various constructions we have considered from a range of languages represent various types of problems all resulting from the projection of three propositions onto a single clause, in ways that involve multiple associations of actant roles to argument positions. These multiple associations result in a range of different morphosyntactic anomalies, arising from attempts to project two or more incompatible semantic structures onto a clause structure.

It is helpful, at this stage, to make a phonological aside, reminding ourselves of the great conceptual breakthroughs in linguistics, formalized and worked out in detail since the 1980s. The development of augosegmental models lets us represent phonological information on distinct ‘tiers’, effectively allowing us to splice together two or more strands of representation in an integrated linear sequence, even though the several ‘tiers’ independently carry information that need not be directly aligned.

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21 Though many of its ideas had been prefigured by Firth and others since the 1930s. However, we are not concerned here with the history of these ideas.
A first, classic illustration is the way Semitic languages use their ‘consonantal tier’ for lexical information, and their ‘vowel tier’ for inflectional/derivational information. Consider, for example, the inflected Tigrinya verb ṭaṣṣaṣṣa ‘he bit’, which is the singular perfective form of the verb ‘bite’ (Hudson 1995). Within this word, the lexical meaning ‘bite’ is represented by the three-consonant sequence n-x-s, while the information that it is a third masculine singular perfective verb is represented by the vowel sequence, ə-ə-ə spliced in such a way that each vowel follows a consonant in sequence. This contrasts with such forms as ṣinaxasu ‘they were biting’, where the vowel sequence and positioning is varied (in addition to the addition of the third-person masculine prefix yi-) or with such forms as ḥaṭala ‘he killed’ where the consonantal skeleton is varied, holding the grammatical meaning constant but varying the lexical base.

The representational techniques developed by the theory of autosegmental phonology allows us to elegantly represent the projection of two independent ‘tiers’ onto a single spliced linear representation:

(41) Vowel tier: ə ə ə ³rd MASC. SG PERF

\[
\begin{array}{cccc}
C_1 & V_1 & C_2 & V_2 & C_3 & V_3 \\
\hline
n & x & s &
\end{array}
\]

‘bite’

A second use of autosegmental representations is in the representation of tone, by using a ‘tonal tier’ to carry melodic information independently of segmental information. For example, many languages have a fixed number of tonal melodies, regardless of the number of syllables in the words they are attached to. These melodies are then stretched out, or compressed, according to the number of syllables (or, more precisely, tone-bearing units) in the word. In Mende, for example, there are five melodies: L, H, LH, HL, LHL (Leven 1973, Odden 1995). In the simplest case, where the number of specified tones in the melody equals the number of syllables, there is a one-to-one association of tones with syllables, as in (42a). Where the number of syllables exceeds the number of tones, tones are mapped onto vowels from left-to-right, leaving some tones to stretch over at least two syllables (according to the melody and number of tone-bearing units), as in (42b). Conversely, where the number of tones exceeds the number of syllables, the left-over tones will be crowded onto (associated with) the last syllable, as in (42c): ə represents a rising-falling pattern found only in monosyllables (and which is the realization of the LHL pattern when associated to a monosyllable), and ə represents a falling pattern, which is the realization of HL when both these tones are associated to one syllable.
By representing tones and segments on different tiers, linked by syllable timing units, we can give an elegant account of many of the relations between tonal meloday and syllabiciry, including, for example, the restriction of contour tones to the last syllable (since the left-to-right tonal association rule means that left-over tones will end up crowding onto the last syllable).

The autosegmental model also allows an elegant account of ‘unassociated’ tones, which are part of the tonal melody of a word but only surface when an extra tone-bearing unit is added for them to associate to. A classical example is pitch-accent in Tokyo Japanese (Haraguchi 1995:5), where, whatever the number of morae in the word, the number of pitch melodies is one greater, but the ‘extra’ melody can only be detected when a following particle is added for the extra tone to associate to. For example, while kâki ‘oyster’, with its HL melody can be differentiated from both kâki ‘fence’ (LHL) and kâki ‘persimmon’ (LHH), these two sound the same until a following particle is added to bear the unassociated third tone: kâki ga ‘fence NOM’, but kâki ga ‘persimmon NOM’. Here, one tone from the tonal melody fails to project in specified circumstances, but can be detected from its behaviour when further tonally-neutral segmental material is added.

What have we learned from the autosegmental revolution in phonology is that projections of sound sequences can be overlaid onto a single linear se-

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22 Because the Tokyo Japanese melody can be predicted by marking a pitch accent on one syllable, a different transcriptional system is normally used. However, I employ the marking of high and low on each syllable to make the point more clearly here.
quence, whether these be consonantal skeletons and vowel sequences in Semitic languages or projections of tonal melodies onto syllables or morae in Mende or Japanese. Can we apply these lessons to the way semantic structure is projected onto linearized clause structure in the case of reciprocals?

5 Reciprocal Discrepancies Revisited: Predicate Overlay and Projection

In §3, we saw a number of paradoxes raised by a range of reciprocal constructions in different languages. Binomial anaphors, in some languages that have them, appear to allow two cases to be associated with a single NP. In languages that employ a verb-affixation strategy for forming reciprocals, the apparent reduction of transitivity in derived reciprocal clauses is contradicted by other evidence pointing to the clause still showing some transitive traits. Other languages, in which more than one verb root appears in reciprocal constructions, give evidence either for the representation within a single clause of action going in opposite directions (Mandarin), of one-way action combined with joint action (Japanese), or of both of these combined, as in the Amele reciprocal construction with its two verbs representing individual action in opposing directions followed by a verb representing joint action. And other languages, such as Iwaidja and Mawng, have essentially compressed one and half clauses into one, at least diachronically, leaving a situation where within a single clause there are two actants each associated with a subject slot (one with the subject prefix, one with the contrastive subject pronoun) and one of actants associated with two distinct syntactic slots (contrastive subject pronoun and object prefix).

All of these anomalies can be seen as different responses to the same engineering problem: of mapping more than one proposition onto a single clause, with conflicting and even permuted links between the semantic argument positions and the syntactic relations in the resultant clause. One or another form of ‘propositional overlay’—the simultaneous mapping of more than one distinct proposition onto a single clause—results in an overcrowded clause where normal constraints on consistency and biuniqueness of argument projections burst at the seams.

Let us now borrow, from autosegmental phonology, the idea of multiple tiers projecting onto an integrated linear structure. We’ll apply it to the problem of how to map reciprocal semantics onto clause structure, selecting four of the above problems: the Amele type ‘unified zigzag’ construction, the Iwaidja/Mawng construction, and two types of mixed transitivity behaviour. I should emphasise that my goal is not to give a formal account of how these constructions should best be modeled in the languages concerned, but rather to
show how the various seemingly aberrant or contradictory elements in these constructions can be motivated by appealing to parts of the two or three propositions that are ‘overlaid’ and mapped onto a single clause or construction.

First consider the Amele ‘unified zigzag’ construction, which of all the languages we have considered makes most overt the various semantic components of a reciprocal event, chaining them into a three-verb construction. The relevant aspects of the construction, as excerpted from (34), are shown in (43).

Each of the three semantic propositions mapped onto this construction motivate one verb or other carrier of inflection: the individual ‘cut’ propositions (X cut Y and Y cut X) each project onto one of the transitive verbs, with the difference in agent between the two propositions motivating the anomalous ‘backward looking switch-reference’ in the second conjoined verb. The ‘joint activity’ proposition projects onto the plural-subject matrix verb at the end of the construction.

$$\text{(43)}$$

$\text{hit}(x, y) \quad \text{hit}(y, x) \quad \text{do.together}_{\text{tr}}(x \& y)$

In Amele, then, we have something close to the sort of one-to-one association between semantic and syntactic elements that we saw in cases of one-to-one mapping of tonal onto syllabic elements in Mende for those words with a perfect match between tonal elements and syllabicity. In our remaining examples, though, the truncation or compression of the construction means that not all semantic elements find a constructional site to be projected onto. Nonetheless, parts of the various propositions show up in elements of the reciprocal construction.

We now turn to Iwaidja. Here the ‘do together’ proposition does not surface at all in the constructional form. Of the remaining two one-way propositions, one gets completely projected onto the verbal prefixes, while the second gets partially projected. The agent shows up as the contrastive subject pronoun, while the second predicate and its second actant both fail to project.

$$\text{(44)}$$

$\text{hit}(x, y) \quad \text{hit}(y, x) \quad \text{do.together}(x \& y)$

Next let us turn to two of the transitivity mismatch problems we encountered. In such cases, the joint-action predicate motivates the conjoint-subject
intransitive predicate, while the bivalent propositions motivate the appearance of transitive characteristics. First, consider Kuuk Thaayorre, where the anomaly is the presence of an ergative case suffix in an intransitive clause, normally present only in transitive clauses. We can motivate the ergative case by appealing to the presence of agents acting upon (syntactically unrealized) patients in each of the two one-way propositions, while the intransitive form of the verb is based on the intransitive joint-action predicate.

Whereas in Kuuk Thaayorre the transitivity paradox focuses on the subject, in the Kayardild and Malagasy cases, it is focused on the object, which is syntactically absent in terms of any directly detectable object NP, but which motivates the linkage of the object body part (in Kayardild, shown here) or the presence of the special object-raising construction (as in Malagasy, not shown here).

Finally, we may return to our familiar ‘each other’ type binomials. At least in those languages such as Spanish where an argument can be made for assigning case or prepositional choice independently to each of the two elements in the binomial expression, we have a further example of predicate overlay. While the conjoined subject is motivated by the ‘do together’ predicate, each of the two parts of the binomial expression are motivated by a different argument position in the one-way transitive predicate:
In each of these cases, then, a plausible motivation for the unusual and paradoxical behaviour we get in the encoding of reciprocals in particular languages is that elements of several propositions are being overlaid into a single construction. Some languages simply describe the whole scene, element by element, as in Golin: the drawback is wordiness. Or they may succeed, as Amele does, in projecting every semantic element onto a single construction. This is highly iconic and certainly useful to linguists in showing us the semantic structure with great clarity, but comes at the cost of considerable constructional complexity. The other languages we have considered in this section all have constructions that are more economical, in the sense of involving fewer elements and in general being shorter, but the cost is always to leave some elements of the semantic representation unassociated with the syntactic representation. Nonetheless, the various characteristics we have been examining can all be motivated by assuming that some part, at least, of more than one overlaid proposition survives projection into the syntax, even though this results in syntactically unexpected suites of characteristics, which are either seemingly inconsistent either with each other (in the sense of assumed compatibility of different syntactic traits sensitive to transitivity) or with general theoretical assumptions about possible projections to clause structure.

6 Conclusion

The great Spanish philosopher of language Ortega y Gasset (1957) once said that “each people leaves some things unsaid in order to be able to say others. Because everything would be unsayable.” Though it is true that ‘everything would be unsayable’ within any one language, one of the great strengths of the typological method is that it allows us to collect together the different things that various languages have chosen not to leave unsaid, and so give us a more nuanced picture of what it is they are all trying to say. Seen another way, one language can help us understand what the structure of another language is trying to tell us, as linguists. This is particularly likely to be true when the semantic complexity is too great to allow the economical encoding of all ele-
ments. And this, in turn, raises the issue of whether, in a formal account of how any one individual language works, we can expect to find a perfect mapping between the semantics and the syntax, or even a single set of mapping principles. Confronted with the sort of constructional diversity we find in reciprocals when we begin to look at the world’s 6,000 languages—and in this chapter we have been kept more than busy with less than a dozen of them—we should heed Ortega y Gasset and realize that, when it comes to complex events, projections from semantics to syntax will typically be selective rather than comprehensive.

Reciprocals, then, challenge many standard assumptions about event construal and the mapping between conceptual and clausal structure. A full integration of the many embarrassments reciprocal constructions afford to current accounts of argument projection may require us to give up long-held constraints on the nature of clause structure and allow representations that are more compatible with ‘overlaid’ semantic representations.23

References


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23 For reasons of space, I cannot survey all of the various theoretical approaches that have confronted this problem Representational techniques that have been employed to capture the conflicting syntactic evidence that reciprocals offer, most importantly conflicts in transitivity, have included Relational Grammar and Arc Pair Grammar (see Aissen 1987), which allows the number of arguments to differ at different levels of the derivation, and the possibility of distinct f-structure and c-structure representations within LFG (Hurst 2003). In each of these cases, distinct levels of syntactic representation are employed.


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