

Complex events, propositional overlay, and the special status of reciprocal clauses

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Submitted to:
John Newman & Sally Rice (eds.)
Proceedings, 7th Conference on Conceptual Structure,
Discourse and Language (CSDL)
Conference theme: empirical and experimental methods

1. Events and semantic typology¹

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)

Semantic typology is the systematic cross-linguistic study of how languages organize meaning into form². It may be regarded as a ‘natural experimental’ method in a similar

¹ I thank John Newman and Sally Rice for their kind invitation to the 7th CSDL conference, 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’, and put more simply ‘to address how language structures conceptual content’ (p. 2). Obviously this is a virtually identical goal 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

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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 experimentation – or a prioristic 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 focussed 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. But 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 from one angle be conceived of as a way of systematizing the very different structural outcomes, in the form of lexicogrammars, 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, focussing on situations where X does something (V) to Y, and Y does V back to X. However, from time to 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).

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.

³ See our project website at <http://www.linguistics.unimelb.edu.au/research/projects/reciprocals/index.html>

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 about here]

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, 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 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, have 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 e.g. 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), or 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 language lexicalizes in this domain. Nonetheless, the results delivered to us through wide-ranging cross-linguistic study 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

⁴ Though none appear to merge father and mother’s brother, opposing it to father’s brother, a fact originally noted by Greenberg (1980), most probably because there is no feature that would allow us to set up a non-disjunctive category here.

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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.

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, and where Gentner (1982), for example, pointed out that the lack of ‘natural partitioning’ of discrete referents (for what has sometimes been called ‘eventities’) makes for much slower learning of labelled 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 events*⁵

One dimension of the event-lexicalization 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 showed 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 employ 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.

In this paper my main focus 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).

(1a) John and Mary love each other / one another.
love (j, m) & love (m, j)

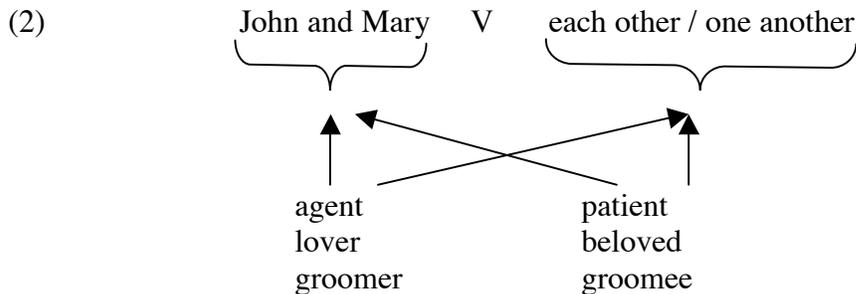
(1b) John and Mary groomed / massaged / deloused each other / one another.
[delouse (j, m)]₁₁ & delouse [(m, j)]₁₂

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 first one event occurs, then 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, e.g. 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
- (c) as a result, there is a double linking of thematic roles to argument position, as illustrated in (2)



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 unique syntactic role, nor that each syntactic position is uniquely associated

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), but though the referential instantiations of each role crank 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.

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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.

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

⁷ For a more detailed treatment than is possible here, see Talmy (2000), and also Croft (1990) and, from a more formal angle, Tenny & Pustejovsky (2000).

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 *woswalak·a*, which he renders as ‘it gravitically-linearizes-aground’, based on the verb root *-swal-* ‘for a flexible linear object to move/be located’.

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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.

(3a) *I heard/saw a riverine wallaby hopping along.*

(3b) *Nga-h-wona-ng / nga-h-na-ng ka-ye-lurlhlurlhmû*
1/3-Ass-hear-PP 1/3-Ass-see-PP 3-SUB-hop(riv.wall):PR

nunh buladbuladj.

DEM riverine_wallaby

‘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 *buladbuladj*. 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 Caledonia – 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 event

Languages may also differ in the role they construe participants as playing, which then has knock-on effects on 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 commonest 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 fuller discussion). This is illustrated in examples (4a-c).

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.

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- (4a) *Nga(n)-ni-ma-ny* *wunyarru*.
Ilg 1OBJ-3ERG-get-PST sickness
'I got sick.' (Sickness got/caught me.)
- (4b) *awu-ni-waywu-ning* *parak*
Maw 3plO-3mascA-take.under.full.sail-PstImperfective far
'They sailed a long way before the wind.'
[(Lit - the wind) took them way along]
- (4c) *ma-ni-mirllkungany* *nuyu* *mata* *mali*
Maw 3.veg.O-3mascA-turn.overPRES to.him VE:ART thought
'He remembers it.'
[Lit: '(the (memory of the) ceremony) turns his thoughts over.'
- (4d) *k-iny-nga-rajpu-n* *jita* *manpiri*.
Maw PR-3fO-3fA-frustrate.egg.laying-PR f:DEM greenback.turtle
'That greenback turtle tried to dig a hole to lay eggs but couldn't.'
Lit. 'It (sc. 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. And 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 how far, at the levels both of the *verb lexeme* and of the *clause*, sequences of subevents 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):

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

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

(6) *b* *mon-day* *d* *yok-e-k*
man stick-piece hold displace-Diff.Subj.Prior-3sg

waty *at* *am-b*
fence top go-PERF.3sg

wog-mgan *yow-p*
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 ‘gather’ (7) gets rendered into Kalam with a string of five verbs (8).

(8a) Next morning he **gathered** firewood.

(8b) *Mnek* *am* *mon* *pk* *d* *ap* *ay-ak*
next.morning go wood hit get come put-3sg.PST
‘Next morning he gathered firewood.’

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 expressives¹⁰, that present events as undifferentiated gestalts like

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.

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‘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 subevents are not comparable – e.g. where a participant is the patient of one subevent and the agent of another.

2.2.1 *semantically complex verbal lexemes.* The first strategy has already been illustrated from English: a language may have 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 *valence-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 commonest solution to this problem is to demote the original agent to some sort of object role, as in Japanese (9a, 9b).

(9a) *Kodomo wa tat-ta.*
JAP child TOP arise-PST
‘The child stood up.’

(9b) (*Boku wa kodomo o tat-ase-ta*)
JAP I TOP child OBJ stand-CAUS-PST
‘I stood the child up, I made the child stand up.’

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 (*bunu* in 10b), and it can

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can also add an ‘accompaniment’ argument by the ‘comitative’ applicative, which then enables the new derived object to be incorporated (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.

(10a) *biy ka-h-burlhm-inj*
DAL man 3-Ass-emerge-PstPerf
‘A man **appeared**.’

(10b) *biy bunu ka-h-marnû-burlhm-inj*
DAL man 3duO 3-Ass-BEN-emerge-PstPerf
‘A man **ambushed** them two, appeared to them two.’

(10c) *biy ka-h-kanj-ye-burlhm-inj*
DAL man 3/3lowerO-Ass-meat-COM-emerge-PstPerf
‘A man turned up with meat, brought meat.’

(10d) *biy bunu ka-h-marnû-kanj-ye-burlhm-inj*
DAL man 3duO 3-Ass-BEN-meat-COM-emerge-PstPerf
‘A man **brought** meat to to the two of them.’, ‘A man brought the two of them meat.’

2.2.3 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 subevents 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 underly 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,

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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 characterisation, 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 these 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 subevents.

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, ‘sesquiclausal’ 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’¹¹ 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’¹² (often called a reciprocal pronoun) in the ‘lower’

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 we 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

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argument position. In reciprocals formed from transitive verbs like love in English, for example (1), 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 (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, TEFL Supplement, p. 1.

(13) businesses competing to sell their wares *to each other and consumers*

Guardian Weekly, Sept 24-30 04:8, 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; (14) is etymologically 'they walked straight past their fellow'.

(14) *Naethon nhw gerdded yn syth heibio i'w gilydd.*
Wel aux.3pl.pst 3pl walk in straightpast to 3pl RECIP
'They walked straight past each other.'

However, in languages with binomial reciprocals like English *each other*, Russian *drug druga* etc., the situation isn't quite so straightforward. This is particularly clear in languages which use case, or prepositions, to indicate grammatical relations. Consider the Russian expressions in (15a,b). The second element takes the case appropriate to the verb's case frame: if the verb is transitive, it takes the accusative (15a); if it is semi-transitive (the verb *pomogat'* subcategorizes for the dative), it takes the dative (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 (15c), contrasting with English where the preposition precedes the whole complex.

(15a) *Oni vide-l-i drug drug-a.*
Rus 3plNOM see-PST-PL other other-ACC
'They saw each other.'

(15b) *Oni pomoga-l-i drug drug-u.*
Rus 3plNOM help-PST-3pl other other-DAT
'They helped each other.'

'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').

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- (15c) *Oni nadejutsja drug na druga*
 Rus 3plNOM rely.on.3pl other on other-ACC
 'They rely on each other.' (Nedjalkov 1991) [verb subcategorizes for prep.]

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 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 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 case: 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 element bears an overt and different preposition for its role: *a* for the (human) object, and *de* for the source.

- (16a) *No entiend-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 respecto,
 the which NEG only is a lack of respect

también 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*)

- (16b) *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.

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and he separate:F.3ss 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 binominal reciprocals were once more independent, each belonging to a different constituent (see Plank to appear); through time the subject-linked element was floated rightward and then began to merge with the remaining element (schematized in (17a) - (17c)).

(17a) *each baron fought (the) other*

(17b) *baron(s) fought, each (the) other*

(17c) *(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 is for there to be a particle or adverb, with a meaning like ‘mutually’. In Kayardild, where the commonest strategy is verbal derivation (see §3.1.3), the adverbial strategy using the reduplicated adverb *junkuyunku*¹³ is used where 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*
wife-NOM husband-NOM big angry mutually

maarra miburl-da kurri-nju-n-d
only eye-NOM see-RECIP-NMZR-NOM

‘The husband and wife and very angry with one another,
they are just staring at each other.’

¹³ Literally ‘straight-straight’, more idiomatically ‘turn and turn about’, ‘in exchange’.

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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:

(19a) *Mapamapa ze-va zua-li-ghu=e*
RECIP 3pl-Poss¹⁴ ask-3sgmO-Nom=Foc
‘They asked each other.’

(19b) .. *aghe-va mapamapa mata-li-ghu*
1DuEx-Possm Recip want-3sgmO-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.

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 paraphraseable as ‘reciprocally V’, ‘engage in reciprocal Ving’, ‘share in Ving’.

(20) *Bil-da miila-thu-n-d.*
Kay 3pl-NOM delouse-RECIP-NMZR-NOM
‘They are delousing each other.’
[of scene where people take it in turns to look for lice on one another]
(cf *bilda miilanda niwaninj* ‘they are delousing him/her’]

(21) *siku-ko=ko da<pa>Ra-ta-n-a*
Mun louse-PL=3plSubj search<RECIP>-PROGR.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:

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.

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.

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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.

(25)	<i>Darri-n-kuru</i>		<i>dangka-a</i>	
Kay	tread.on-NMZR-PROP		person-NOM	
	<i>mirra-yala-thu</i>	<i>darri-ju</i>	<i>maku-walath-u</i>	<i>bardaka-wu.</i>
	massage-POT	tread.on-POT	woman-many-MPROP	belly-MPROP

‘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)	<i>Dan-da</i>	<i>maku-wala</i>	<i>mirrayala-thu-th,</i>
KAY	this-NOM	woman-many.NOM	massage-RECIP-ACT
	<i>darri-nju-thu</i>	<i>bardaka-wu.</i>	
	tread.on-RECIP-POT	belly-MPROP	

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

As a third example, consider Malagasy. The data is from Keenan & Razafimamonjy (2002), and the identification of the discrepancy in clausal transitivity is from the discussion of their data in Hurst (2002).¹⁷ Malagasy is well-known as a VOS language, as shown in (27a); reciprocals take a verbal affix and reduce the valence by one, as shown in (27b), which has no object but a subject conjoining the two actants (*Rabe sy Raso* ‘Rabe and Raso’).

(27a)	<i>M-an-aja</i>	<i>an-dRabe</i>	<i>Raso</i>
MAL	pres-ACT-respect	ACC-Rabe	Raso
	‘Raso respects Rabe.’ (transitive)		

(27b)	<i>M-if-an-aja</i>	<i>Rabe sy</i>	<i>Raso</i>
MAL	pres-REC-ACT-respect	Rabe and	Raso

¹⁷ Hurst’s LFG analysis posits an object in F structure but not in C structure.

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‘Rabe and Raso respect one another.’ (derived intransitive?)

So far, Malagasy appears to be a straightforward case of valency reduction in reciprocals. But now consider the following object-raising construction for representing reported speech, comparable in structure (though not in the verbs it occurs with) to English ‘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 Raso to have cultivated rice’. This reported-speech object-raising construction is only allowed if the main clause verb has an object.

- (28) *N-i-laza* *an-dRaso* [*ho namboly vary*] *Ravelo*
pst-ACT-say O-Raso COMP pst:cultivate rice Ravelo
V O [Comp V O] S
‘Ravelo said Raso 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) *N-ifamp-i-laza* [*ho namboly vary*] *Raso sy* *Ravelo*
pst-REC-ACT-say COMP pst-cultive rice Raso and Ravelo
‘Raso and Ravelo said of each other that s/he cultivated rice.’
[Lit. ‘Ravelo and Raso 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 problem 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 argument in normal reciprocals likewise suggests they are intransitive, but the behaviour of apposed body parts suggests they are transitive. And 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

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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 event. 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 igin*
GOL woman two be.standing:SEQ woman one head-3 hair-3

aato-n-g-w-e
touch-3-Ass-3-Dist

abal ta kwi abal ta gibl-in igin aato-n-g-w-e
woman one in.return woman one head-3 hair-3 touch-3-Ass-3-Dist

eri-n-g-w-e.
go-3-Ass-3-Dist

‘Two women are touching each other’s hair.’

Literally: ‘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 Nonetheless, Golin clearly shows how some languages do not compress the semantics of reciprocals into a single clause; see Mathews & 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 now 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 (32), or the construction found in Yawuru and other Nyulnyulan languages (33; see also McGregor 1999) which combines a preverb denoting the action with an auxiliary meaning ‘exchange’, thus ‘kiss exchange’ for ‘kiss each other’. In both the

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.

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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)

(32a) *Taroo-ga Hanako-ni/to machi-de au*
JAP Taroo-NOM Hanako-DAT/COM street-LOC meet
'Taroo meets Hanako on the street.' (K&K in press:20)

(32b) *John to Mary ga ai-si-au-te iru*
JAP COM NOM love-do-meet/RECIP-DEP be
'John and Mary love each other.'

(33) *Ngaw inga-rr-banji-nda*
YAW kiss 3:NOM-aug-EXCHANGE-PF
coverb auxiliary
'They kissed one another.' (Yawuru; Hosokawa 1991:175)

Note that the Mandarin type involves the repetition of the main predicate ('hit' or whatever, which appears twice), 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: to repeat the base event, and to follow 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, grammaticization 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 nonetheless sufficiently unified constructionally 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

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transitive verbs, the verb is repeated, suffixed by the different-subject marker and a third singular suffix; 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.¹⁹

(34) *Age qet-u-do-co-b qet-u-do-co-b eig-a*
AME 3pl cut-pred-3sg-DS-3sg cut-pred-3sg-DS-3sg 3pl-tod.pst
‘They cut each other.’ (Roberts 1987:132)

(35) *Age age na sab je-ce-b je-ce-b eig-a*
AME 3pl 3pl of food eat-DS-3sg eat-DS-3sg 3pl-tod.pst
‘They ate each other’s food.’

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 mono-verbal clauses, that (34) and (35) have three verbs and three clauses (e.g. *jeceb, jeceb* and *eiga* 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 at third person:

(36) *Ele ew-udo-co-b ew-udo-co-b ow-a*
AME 1du despise-IO.3sg-DS-3sg despise-IO.3sg-DS-3sg 1du:subj-PST
‘We despise each other.’ (Roberts 1987:307)

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

¹⁹ 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 p. 132).

Age jacas qet-i do-co-b do-co-b eig-a
3pl tobacco cut-pred.3sg-DS-3sg 3sg-DS-3sg 3pl-tod.pst
‘They cut tobacco for each other.’]

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, p. 132; this would make this example, literally, ‘they tobacco cut he.gives.him he.gives.him they are’.

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we cannot resolve this issue here, the general point is that its 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:

- (37) X and Y act together / do something together
X Ves Y
Y Ves 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 ellipited, leaving a clause with a dangling contrastive pronoun – something like ‘she hit him and he in turn ...’ – with a one-and-a-half clause (or sesquiclausal) 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: $V \{x,y\} \& V \{y,x\}$

[**Subj**:x > **Obj**:y-V and **y**:Contr²⁰ Object]

²⁰ For certain person/number combinations the situation is more complex; we abstract away from those here.

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) *ngabi j-ara-n* *ajbud lda jamin* *yaw-urraka*
 Iwa 1sg 1sg.away-go-PST beach and 3sg:CONTR 3sg.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 *kurrkbung* ‘louse’) is the grammatical object while the person in whose domain it is located would normally be represented by an oblique pronoun directly after the verb; in the corresponding reciprocal, *lda* 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 *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.

- (40a) *K-aya-n* *lda jamin.*
 Iw 3FemsgA>3sgO-see-NPst and 3sgCONTR
 ‘They two (including at least one female) are looking at/seeing one another.’
 [Literally: ‘she is looking at him/her and (s)he in turn’]

- (40b) *a-ldindi* *k-aya-n* *lda jamin* *kurrkbung*
 Iw 3plS-stand:DU 3FemsgA>3sgO-see-NPst and 3sgCONTR louse
 ‘They (two) are delousing one another.’

- (40c) *anb-uku-n* *lda wamin* *a-ngurnaj*
 Iw 3plA>3plO-give-NPST and 3plCONTR 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 projecting semantic arguments onto syntactic positions. Standard syntactic theories posit a biuniqueness constraint, with various formulations according to the 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, 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 into a single clause, in defiance of standard constraints on argument projection.

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, or tone bearing units) in the word. In Mende, for example (Leven 1973, Odden 1995) there are five melodies (L, H, LH, HL, LHL). 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): $\tilde{\text{a}}$ represents a rising-falling pattern found only in monosyllables (and which is the realization of the LHL pattern when associated to a monosyllable), and $\hat{\text{a}}$ represents a falling pattern, which is the realization of HL when both these tones are associated to one syllable.

(42a)	kpà	L	fândé	L	H	nikíli	L	H	L
		σ		σ	σ		σ	σ	σ
			kpa		fan de		ni	ki	li

(42b)	kpàkàli	L	félàmà	H	L
		/ \		\	
		σ σ σ		σ σ σ	
		kpa ka li		fe la ma	

(42c)	mbâ	LHL	nyâhâ	L	H	L
		\ /		\ /		
		σ		σ σ		
		mba		nya ha		

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 melody and syllabicity, 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 1999:5), where, whatever the number of morae in the word, the

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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 kákì ‘oyster’,²² with its HL melody, can be differentiated from both kàkí ‘fence’ (LHL) and kàkí ‘persimmon’ (LHH), these two sound the same until a following particle is added to bear the unassociated third tone: kàkí gà ‘fence NOM’, but kàkí gá ‘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 we have learned from the autosegmental revolution in phonology is that projections of sound sequences can be overlaid onto a single linear sequence, 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), or 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, and 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

²² Because the Tokyo Japanese melody can be predicted by marking a pitch accent on one syllable a different transcriptional system is normally used, but I employ the marking of high and low on each syllable to make the point more clearly here.

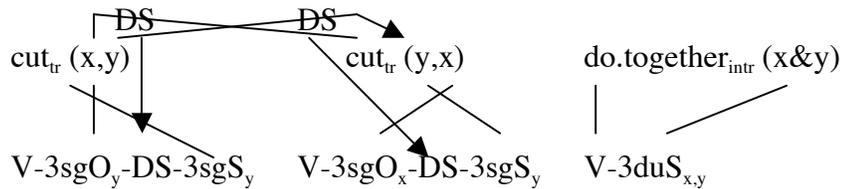
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types of mixed transitivity behaviour. I should emphasise that my goal is not to give a formal account of how these constructions should best be modelled in the languages concerned, but rather to show how the various seemingly aberrant or contradictory 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 example 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.

(43)

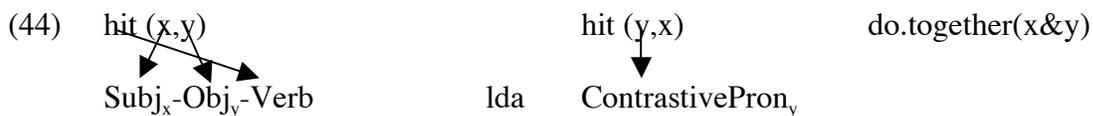


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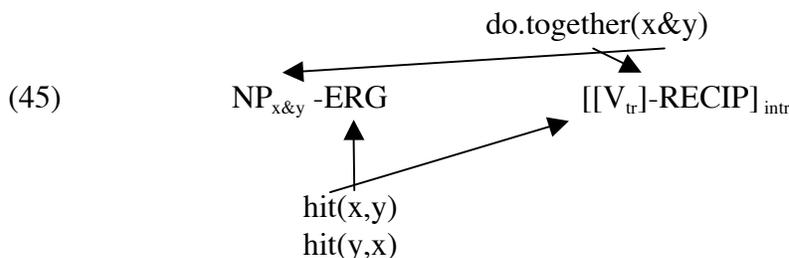
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In Amele, then, we have something close to the sort of one-to-one association between semantic and syntactic elements that we saw in cases of one-to-one mapping of tonal onto syllabic elements in Mende for those words with a perfect match between tonal 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.

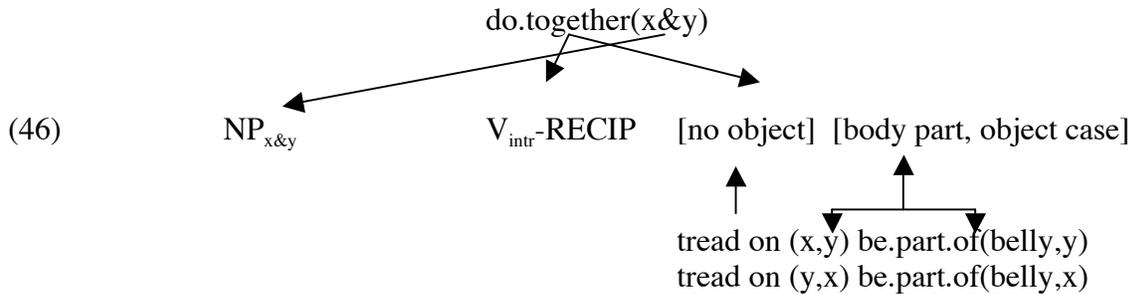
Let us turn next to Iwaidja. Here the ‘do together’ proposition does not surface at all in the constructional form. Of the remaining two one-way propositions, one gets completely projected onto the verbal prefixes, while the second gets partially projected: the agent shows up as the contrastive subject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



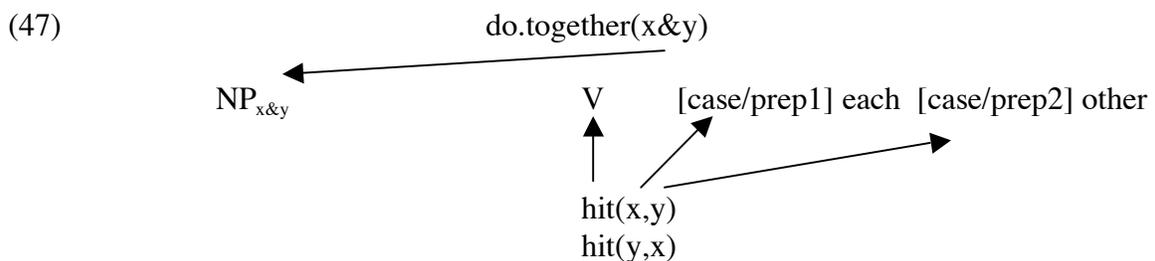
Next let us turn to two of the transitivity-mismatch problems we encountered: here the joint-action predicate motivates the conjoint-subject intransitive predicate, while the bivalent propositions motivate the appearance of transitive characteristics. First consider Kuuk Thaayorre, where the anomaly 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 focusses on the subject, in the Kayardild and Malagasy cases, it is focussed 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 how particular languages encode reciprocals 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 to 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

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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 elements. 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, AND 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 article 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 construction 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

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²³ For reasons of space I cannot survey all of the various theoretical approaches that have been confronted this problem. Representational techniques that have been employed to capture the conflicting syntactic evidence reciprocals offer, most importantly conflicts in transitivity, have included Relational Grammar and Arc Pair Grammar (see e.g. Aissen 1987), which allow 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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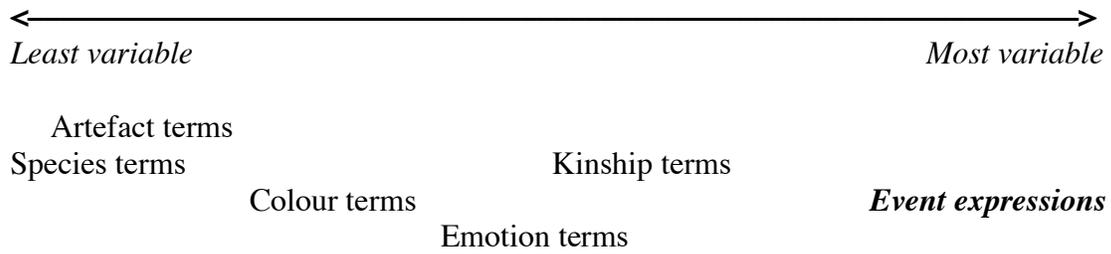


Figure 1. *Degree of cross-linguistic variability for some sample semantic domains*