TITLE: Radical Construction Grammar

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Abstract

Radical Construction Grammar is a variety of construction grammar that incorporates the methods and results of typology. The tremendous diversity of grammatical structures across and within languages uncovered in typological research points to a minimum of syntactic structure. Constructions are primitive units of representation, and categories are defined by their roles in constructions. The only internal syntactic structure to constructions is its parts. The morphosyntactic properties of constructions are mapped onto a space of morphosyntactic form. The functions of constructions are mapped onto conceptual space. Universals of grammatical structure are found in constraints on the mapping of form onto function.

Keywords

construction grammar, typology, semantic map, distributional analysis, construction element, construction, strategy, function, syntactic space, conceptual space

Key points

• Radical Construction Grammar is the result of bringing together linguistic typology and construction grammar
• Radical Construction Grammar considers the structural diversity of languages, and argues that language structure is both less complex and less uniform across languages than in other syntactic theories
• Constructions (form-function pairings) are the basic units; syntactic categories are derived from constructions (that is, distributional analysis does not find universal categories)
• Constructions can be represented in a syntactic space representing the morphosyntactic variation of constructional form across languages, and are related to their functions which are represented in a conceptual space; the mapping between the two is probabilistic
• The only internal structure of the syntactic structure of constructions is the part-whole relation between a construction and its construction elements

Glossary (optional)

Nomenclature (optional)

Introduction

Radical Construction Grammar (Croft 2001, 2013a) is a variety of construction grammar that incorporates the methods and results of typology. Construction grammar is a family of syntactic theories that share certain basic features: (i) the basic grammatical unit is a pairing of form and meaning; (ii) all grammatical units are constructions, whether simple or complex; (iii) the constructions in a language is organized in a network. The tremendous diversity of grammatical structures across and within languages uncovered in typological research leads Radical Construction Grammar to posit a minimum of universal syntactic structure. First, constructions as wholes are the basic unit of syntactic analysis. Syntactic categories are not building blocks of constructions; they are instead defined by their distribution in constructions, which varies from one construction to the next. Second, the internal syntactic structure of constructions is made up of only the part-whole relation of the construction's form to its roles or elements. Third, constructions are language-specific, that is, there are no universal constructions based on their syntactic properties. Universal generalizations about the nature of syntax are found in the symbolic relation between form and function in constructions, and in the structure of the spaces of morphosyntactic structure and semantic/pragmatic function.

Body:

Syntactic structure of constructions and cross-linguistic diversity

Consider the simple English sentences in (1)-(2):

(1) That tree is tall.
(2) Emily is eating some cookies.

We can describe these sentences as instances of two different English constructions, the Copular Predication construction in (1) and the Transitive construction in (2).

The most basic analysis of (1) and (2) would identify the parts of the construction, the **construction elements** or **CEs** (Fillmore et al. 2012), as in (1′) and (2′):

(1′) [Sbj *be* Adj]
(2′) [Sbj Verb Obj]

The construction representations in (1′) and (2′) are also abstractions over a set of sentences containing different CEs, such as *That building is tall, Kareem is tall, They are tall, That tree is beautiful, We were happy,* and so on. The CEs are roles that subsume particular words, morphemes or phrases that can occur in that role. CEs such as Adj and Verb define word classes; Sbj and Obj define syntactic categories of words or phrases; and *be* defines a set of inflectional forms of the English verb *be* that occur as that CE.

There are two assumptions about the construction representations in (1′) and (2′) that are made in many syntactic theories but are rejected by Radical Construction Grammar. The first is that a construction is defined by its combination of CEs: for example, the definition of the English Copular Predication construction is a sentence that includes a Subject, a form of *be* and an Adjective in the configuration specified in (1′). This is the **building block model** of individual

language constructions: complex syntactic structures are built out of a set of CEs or roles that occur in a language such as English (Langacker 1987:452; Croft 2023). The second is that these same CEs—Subject, Object, Verb, Adjective, etc.—are part of a universal inventory available to all languages for building constructions. This is the **skeleton model** of language universals, sometimes called 'Universal Grammar' (Croft 2023).

The motivation for rejecting the building block model and the skeleton model is the very high degree of variation in morphosyntactic structure both across and within languages. The putatively universal—that is, cross-linguistically valid—syntactic category of Adjective is an example of the high degree of variation.

TABLE 1 AROUND HERE

In English, words in the Adjective category use a distinctive predication construction compared to Verbs: English uses an inflected copula (*be* and its forms) for predicated Adjectives, while Verbs are directly inflected. In many other languages, such as Big Nambas, the translation equivalents of Adjectives use the same predication construction as the translation equivalents of Verbs. Some linguists argue that such languages do not have Adjectives, because the predication construction does not distinguish them. Other linguists argue that such languages do have Adjectives, on the basis of other morphosyntactic constructions that distinguish Adjectives and Verbs (Haspelmath 2012). In other languages, the problem is finding a unitary Adjective category. For example, Japanese translation equivalents of English Adjectives fall into two distinct categories (Uehara 1998; Croft 2001:81-82).

The general problem is that one cannot decide whether an English category like Adjective is the same Adjective category in Japanese or any other language, because the syntactic categories are defined by constructions in each language, and those constructions are different. If one tries to make the constructions comparable across languages, the same high degree of variation appears. For example, in German Adjectives can be defined in the modification construction, in part by their inflection indexing (agreeing with) the modified (head) noun in number, case and gender. The nearest construction in English to the German inflection indexing the head noun is inflection in number—but it only occurs with English Demonstratives, not English Adjectives (Croft 2007).

In other words, whether one looks at the syntactic categories or the constructions used to define those categories, neither motivates a consistent set of universal categories that would support the skeleton model of Universal Grammar. Across languages, there is enormous diversity. This empirical observation has led many typologists to give up the skeleton model of language universals for many if not all syntactic categories (e.g., Dryer 1997; Cristofaro 2009).

The same problem occurs in the analysis of individual languages. In the analysis of individual languages, syntactic categories are defined by the constructions they occur in, or more precisely, certain roles/CEs of the constructions they occur in. For example, in English, Adjectives occur in many constructions, including the Copular Predication construction, the Adjectival Modification construction, the Comparative Inflection construction, and the Degree Admodification construction (Table 2).

TABLE 2 AROUND HERE

This method for defining categories is called **distributional analysis**: define syntactic categories by their occurrence (distribution) in (roles of) constructions of the language.

Distributional analysis was codified in the mid-20th century and is the base method of syntactic argumentation in structuralist, generative and typological linguistics. However, if one does distributional analysis across multiple constructions, one finds that the syntactic categories they define are not the same. For example, the relevant roles in the four constructions for defining English Adjectives, do not define the same class of English words as Adjectives (Table 3).

TABLE 3 AROUND HERE

The empirical results produced by distributional analysis both within and across languages (the latter assuming a way to identify equivalent constructions across languages) does not lead one to a clearly defined set of syntactic categories that can serve as building blocks for constructions in a single language, let alone a universal set of building blocks valid across languages. Linguists adhering to the building block model and the skeleton model have chosen to resolve this problem by selecting certain constructions as the sole 'test', 'diagnostic' or 'criterion' for identifying a syntactic category in a language. Radical Construction Grammar argues that this constitutes **methodological opportunism** (Croft 2001, chapter 1; also called diagnostic fishing; Haspelmath 2018:101-2), and that one must consider all distributional patterns equally.

The second problem is a logical one. In the building block model, constructions are defined by the categories, i.e. roles or CEs, that they consist of. But in the distributional method, the categories are defined by the constructions they occur in. Assuming both the building block model and the distributional method leads to circular argumentation. A consistent theory must discard one or the other. This is an empirical problem. If a complete distributional analysis produced consistent syntactic categories across constructions and across languages, then the building block model would be compatible with it. Given that it does not, a choice has to be made between consistent application of the distributional method and the building block and skeleton models. Radical Construction Grammar abandons the building block and skeleton models.

Representing language form and function in Radical Construction Grammar

In Radical Construction Grammar, constructions are the primitive units of syntax. Complex constructions have roles (CEs). Syntactic categories are equivalent to construction roles, defined by their distribution in the construction and therefore derivative concepts. Since constructions are not built up from a universal or even language-specific set of building block categories, the inference of grammatical patterns in a language and grammatical universals across languages is based on other grounds: usage and function.

Syntactic distribution is occurrence of morphosyntactic units—words, morphemes, phrases—in roles of constructions. As noted above, constructions are generalizations over sentences, or in language use, utterances. A speaker—or a linguist analyzing the language—forms a generalization over utterances; this is a construction. Part of forming that generalization is alignment of morphosyntactic units in the same role in the construction. Hence the set of morphosyntactic units filling that role—the category defined by that construction—is constituted by the words, morphemes and/or phrases that actually occur in the role in language use.

Generalizing over constructions requires function as well as form. Identifying the English Copular Predication construction involves identifying its function of predicating certain concepts, including property concepts such as tallness. In Radical Construction Grammar, the function of a construction has two dimensions: its **semantics**, that is, the information content being conveyed,

and its **information packaging**, that is, how that semantic content is presented in, or construed for, the discourse context (Croft 2022, chapter 1). Function constitutes a basis for identifying counterpart constructions in other languages. One can compare the property predication construction in one language to the property predication construction in any other language.

The utterance forms that express a particular function in a single language may be quite varied, representing distinct morphosyntactic structures that would be categorized as different constructions rather than instances of a single construction. In fact, this is norm in language use (Croft 2010a). If one starts from function, as does a speaker verbalizing an experience in an utterance, there are many different forms that could be produced. Table 4 gives some examples from an experimental context where American English speakers were asked to describe a film they had just seen (the Pear Film; Chafe 1980).

TABLE 4 AROUND HERE

The speakers described the same scene in the film, but for the pearpicker's motion event, they used two subtypes of a motion argument structure construction: one with a postverbal argument phrase describing the surface that the agent moved on (the ladder), and the other with an argument phrase describing the destination of the motion (the tree; the last instance is elliptical and so could be either).

Radical Construction Grammar, like typology, proceeds onomasiologically, like a speaker verbalizing their experience: starting from function, and then classifying the range of forms used to express that function within and across languages. The onomasiological approach puts the organization of constructions by function on equal footing with the organization of constructions by form. Treating form and function equally leads to a novel representation of syntactic categories and the relation between form and function in constructions.

For example, the English Copular Predication construction is used both for property predication (*It is tall*) and for object predication (*It is a tree*); but in other languages the adjectival predication construction is the inflected form also used for verbal (action) predication (Table 1). Stassen (1997) shows that action, property and object predication form a scale, a dimension in conceptual space, and different constructions in different languages map onto different regions in the conceptual space. This is the semantic map model used in typology and elsewhere, illustrated in Figure 1.

FIGURE 1 ABOUT HERE

Stassen further shows that parts of speech constructions divide property concepts more finely in conceptual space between object concepts and action concepts as in Table 5 (see also Rogers 2016).

TABLE 5 ABOUT HERE

The use of questionnaires (Dahl 1985) or experimental stimuli (Levinson et al. 2013; Majid et al. 2008) to elicit morphosyntactic forms, and the use of quantitative methods such as multidimensional scaling to analyze the variation in the resulting forms (Croft and Poole 2008), demonstrates that speakers make very fine-grained distinctions that differ from language to language (and probably also from speaker to speaker of the same language). The conclusion drawn

in Radical Construction Grammar is that conceptual space is largely continuous and multidimensional (Croft 2010a).

Likewise, morphosyntactic form is much more fine-grained than generally assumed. For example there is tremendous cross-linguistic variation in constructions expressing grammatical voice. English makes a seemingly sharp distinction between its Active Voice (taken as the basic voice construction) and the Passive Voice, as seen at the top and bottom of Table 6.

TABLE 6 AROUND HERE

One can distinguish the two English constructions by several morphosyntactic features: whether the agent or patient are in the subject, object or oblique form (flag, i.e. case affix, adposition, or special form); whether the verb indexes (agrees with) the agent or patient as subject; and whether the verb form differs from that of the basic voice construction in the language.

However, when one turns to non-basic voice constructions in other languages, many different combinations of these morphosyntactic features are found. The rest of Table 6 illustrates some of the diversity of morphosyntactic features of constructions in other languages. Morphosyntactic features that encode the participant as a subject, or keep the verb in the basic voice form are in red; features that encode the participant as an object, or use a derived verb form, are in blue; and features that encode the participant as an oblique, or some other special encoding, are in purple. A brief scan of the upper part of Table 6 shows that constructions vary in the combination of agent encoding, patient encoding, and verb form. (Typologists sometimes call a non-basic voice form that encodes the agent in object-like form an 'inverse',) Moreover, the three ways of encoding a participant—flag (case/adposition), index (agreement), and verb form—do not always match up for a single participant in the non-basic voice construction in some languages.

Nevertheless, when one examines a wide range of non-basic voice constructions, there is a pattern to this variation (Croft 2001, chapter 8). There are two roughly correlated scales, one for how un-subject-like the agent is, and how subject-like the patient is. The different voice constructions can be ranged along this scale. Moreover, the more passive-like construction is used when the agent is higher than the patient on what is called the Animacy or Empathy Hierarchy—first or second person (speaker and hearer) > third person pronoun > noun referring to a human > an animate being > an inanimate being. In other words, there is an alignment of the syntactic space of morphosyntactic form and the conceptual space of who is acting on whom (Croft 2001:313, Figure 8.13).

Constraints like this on the form-function mapping are found quite broadly. For example, the morphosyntactic structure of predication constructions is aligned with the conceptual space of semantic categories being predicated, so that action predication uses the least number of morphemes to encode the predication function, and object predication the most (Croft 1991:130; Stassen 1997:127).

The same phenomenon of fine-grained patterns of form correlated with fine-grained distinctions in function is also found in studies of verbalization in a single language (Croft 2010b; Croft 2021, chapter 9). For example, there are several scenes in the Pear Film that have a human participant who does not intentionally bring about the action. In verbalizations of the English speakers use three different constructions are used to encode the human participant:

(3)	2,67	and then **he**…crashes into a rock	[human is Subject]
	11,68	[1.2 [.25] and [.65]] **his bike** hits into a rock,	[other participant is Subject]

3,21 a--nd . . **there's a stone** in the way, [existential statement]
3.22 so his bicycle falls over

The different constructions in (3) are all used to describe the same scene. But if one compares the proportions of the three constructions for the different scenes, one finds that the human Subject construction is used more frequently to verbalize the events more likely to be under control of the human participant (and hence the human "should have" been under control of), while the two constructions without a human Subject are used more frequently to verbalize the events less likely to be under control of the human participant (see Table 7):

TABLE 7 AROUND HERE

There is no simple one-to-one mapping between (un)likely human control and human (non-)Subject constructions in English. But there is a probabilistic relationship between human (expected) control and Subject encoding. The conclusion drawn in Radical Construction Grammar is that the form-function mapping of constructions is a probability distribution of construction forms across their functions in conceptual space; and this probability distribution reflects the correlations between constructional form and constructional function that are revealed in typological studies of cross-linguistic variation.

The internal structure of constructions

Syntactic theories aim to account for the patterns in grammatical structure, including the high degree of morphosyntactic variation within and across languages. In Radical Construction Grammar, these patterns are primarily accounted for by properties of the mapping between form and function in constructions. The form-function relation in constructions also plays a central role in Radical Construction Grammar's representation of the internal structure of constructions. Radical Construction Grammar's second major principle is that the internal morphosyntactic structure of constructions consists simply of the part-whole relation between the construction as a whole and the CEs or roles that constitute its parts. The internal morphosyntactic structure does not include syntactic relations between CEs, such as constituency or dependency. Grammatical phenomena that are attributed to syntactic relations are argued to instead involve the symbolic relation between a CE and its function.

Syntactic relations do not constitute overtly visible syntactic structure (but see below). Their presence is inferred through 'tests'/'criteria'/'diagnostics' for constituency or dependency. But as with 'diagnostics' for syntactic categories, those for syntactic relations do not always match up: they differ across languages, and differ within a language, and are construction-specific (Croft 2001:185-197). Langacker (1997) argues there is a complex relationship between formal grouping of CEs and conceptual grouping of their functions, governed by the psychological principles of contiguity and similarity.

Syntactic relations can be divided into two types: collocational dependencies, such as associations between specific words, such as *toasted bread* vs. *roasted meat* (Matthews 1981:5), often with idiomatic meanings such as *pull strings* and *spill the beans* (Nunberg, Sag and Wasow 1994). Nunberg et al. argue that collocational dependencies are semantic in nature: *spill the beans* is an analyzable construction, but with idiomatic meanings for *spill* ('divulge') and *beans* ('information').

Instead, the most important putative evidence for syntactic relations are coded dependences, that is, words or morphemes that appear to directly encode a syntactic relation, most of which are enumerated in Table 8.

TABLE 8 AROUND HERE

However, empirical phenomena found across languages suggest that assuming syntactic relations between CEs is problematic, and the same phenomena are better accounted for by either the symbolic relation between a CE and its function, or the part-whole or role relation between the CE and the construction it is a part of (Croft 2001, chapter 6). One example is given here.

The phenomenon of indexation has traditionally been described as encoding a syntactic relation of agreement holding between one CE (the 'target') and another CE (the 'controller'). However, it is very common that the controller CE does not occur in a construction. For example, in Warlpiri, a pronominal argument phrase, which seems to control the Verb form, only appears when the referent is being emphasized; compare (6) to (7) (Hale 1983:6, personal communication):

(6) wawirri-Ø kapi-**rna**-Ø panti-rni yalumpu-Ø
kangaroo-ABS FUT-**1SG.SBJ**-3SG.OBJ spear-NPST that-ABS
'I will spear that kangaroo.'

(7) **ngajulu-rlu** kapi-**rna**-Ø wawirri-Ø panti-rni yalumpu-Ø
I-ERG FUT-**1SG.SBJ**-3SG.OBJ kangaroo-ABS spear-NPST that-abs
'I myself will spear that kangaroo.'

There is no candidate syntactic relation between the target *kapi-rna-Ø* in (6) and any other CE in the sentence in (6). This problem in analysis disappears if one hypothesizes instead that all indexes refer, that is, the suffix *-rna* refers to the speaker—a symbolic relation—and the apparent "agreement" relation found in (7) is a consequence of the roles of the two CEs *ngajulu* and *-rna* in the Warlpiri Emphatic Argument construction (Barlow 1988; Croft 2001:226-32; Croft 2013b).

Conclusion

In Radical Construction Grammar, like other construction grammars, morphosyntactic structures, simple or complex, are pairings of form and function, and complex constructions consist of parts (CEs). But this is all of the morphosyntactic structure that is posited (this is the second principle of Radical Construction Grammar). Constructions, and the categories defined by the roles that make them up, are language-specific entities that are created when speakers verbalize their experience in language use.

There is a high degree of variation in the relation between function and the form that expresses it, both within and across languages. The variation in morphosyntactic structure in constructions across and within languages is very fine-grained. It does not lend itself to discrete universal categories of constructions (the third principle of Radical Construction Grammar). The variation in categories defined by the roles in these constructions across and within languages is also very fine-grained. It does not lend itself to discrete universal categories of words, morphemes or phrases (the first principle of Radical Construction Grammar). However, this variation is constrained by the structure of the conceptual space of functions of constructions and the categories they define.

The universal patterns across languages are found in the structure of morphosyntactic and conceptual space, and how function is expressed in form in the verbalization of experience.

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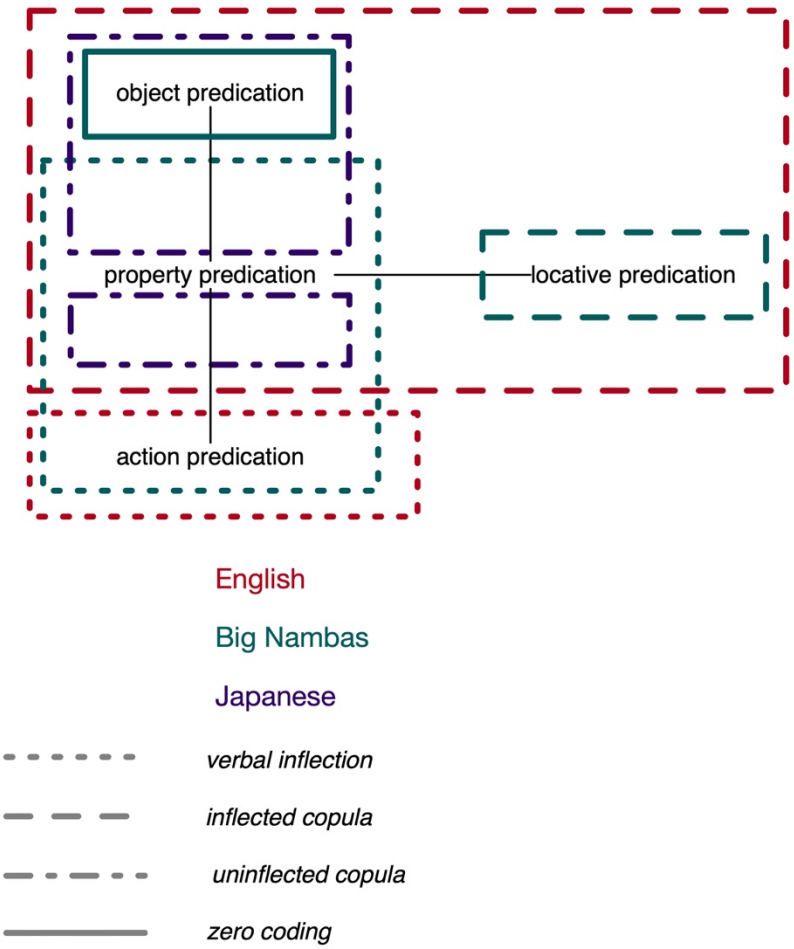

Figure 1. Semantic maps of predication constructions in English, Big Nambas and Japanese (data in Table 1).

English Adjective	That tree **is** tall.
English Verb	Jerry play-**s** the guitar.
Big Nambas Adjective (Fox 1979:33)	Na-dep' etka **i-**pas ART-earth here **3SG.RL-**good 'the earth here is good.'
Big Nambas Verb (Fox 1979:54)	**I-**duduvah **3SG.RL**-play 'He plays/played.'
Japanese Adjective (Uehara 1998:88)	Yasu-**i**. cheap-**INFL** 'It is cheap.'
Japanese "Nominal Adjective" (Uehara 1998:88)	Kirei **da**. pretty **COP** 'It is pretty.'
Fox, B. J. 1979. *Big Nambas Grammar*. (Pacific Linguistics, B60.) Canberra: Australian National University. Uehara, Satoshi. 1998. *Syntactic categories in Japanese: A cognitive and typological introduction*. Tokyo: Kurosio Publishers.	

Table 1. Cross-linguistic variation of Adjective categories.

English Construction name	**Construction Schema with relevant Element/Role**	**Example**
Adjectival Modification	[**Adj** Noun]	*a **tall** tree*
Copular Predication	[Sbj *be* **Pred**]	*That tree is **tall**.*
Comparative Inflection	[**Adj**-*er*]	***tall**-er*
Degree Admodification	[*very/a little*/etc. **Adj**]	*very **tall***

Table 2. Distribution of English Adjective class in four constructions.

English Construction	**"Adjective" not occurring in construction**
Adjectival Modification	**an **alive** insect* [cf. *This insect is **alive***]
Copular Predication	**This chapter is **entire*** [cf. *the **entire** chapter*]
Comparative Inflection	****intelligent**-er/**intelligent**-est* [cf. *more/most **intelligent***]
Degree Admodification	**a very **even** number* [cf. *an **even** number*]

Table 3. English "Adjectives" that do not occur in one of the "Adjectival" construction contexts.

1,24 1,25	[1.3 [.95] A--nd u--m] then **he climbs back up the ladder**, [.35] and he [.3] and he . . starts picking pears again.
2,10 2,11 2,12	[.6] and then **he's . . going back up into the tree**, it's like he's . . been doing this all day, and . . it's just a monotonous kind of thing for him.
4,13 4,14	[.7] And when **he walked back up** I heard [1.3] the ladder creak, as he stepped on . . each rung,
6,11	[3.2 [1.2] U--m [1.2] tsk] then you see **him going back up in the tree.**
13,23	[.45] and then **he . . starts going back [.55] up his ladder,**
[Sbj MotVerb *back up* Obj]	**he climbs back up the ladder** **he . . starts going back [.55] up his ladder**
[Sbj MotVerb *back up* Loc]	**he's . . going back up into the tree** **him going back up in the tree.**
[Sbj MotVerb *back up*]	**he walked back up**

Table 4. Occurrence of a specialized motion construction in the Pear Stories narratives. Scenes and intonation units are numbered following Croft (2010b).

Class of semantic concepts	
Object	*woman, tree, bowl…*
Gender Material	*male, female…* *wooden, silver, golden…*
Value Age Form	*good, bad, important, nice…* *new, old, young, fresh…* *round, straight…*
Color Dimension	*black, white, red…* *big, small, long, short, wide, narrow, thick, thin…*
Physical property	*hard, soft, smooth, heavy, light, hot, cold, sweet…*
Human Propensity	*hungry, happy, sad, angry, cruel, proud…*
Action	*go, play, die, give…*

Table 5. Semantic scale of subclasses of property concepts between object concepts and action concepts in their distribution in predication constructions.

	Agent (A)			Patient (P)			Verb form
Construction	**flag**	**index**	**position**	**flag**	**index**	**position**	
English Active	sbj	sbj	sbj	obj	~sbj	obj	basic
Karo Batak Passive	–	spec*	incorp*	–	~sbj	sbj	derived
Upr. Halkomelem Passive	–	~obj	obj	–	spec	sbj	basic
Maasai Inverse	sbj	~sbj	–	obj	spec	–	basic
Yurok Passive	sbj	~sbj		obj	sbj		derived
Welsh Impersonal Passive	obl	–	obl	obj	–	obj	derived
Bambara "Passive"	obl	–	obl	sbj	–	sbj	basic
English Passive	obl	~sbj	obl	sbj	sbj	sbj	derived

KEY: sbj = subject-like, obj = object-like, ~sbj = no subject indexation, obl = oblique, spec = special P indexation, incorp = argument in incorporation position, basic = verb form in Active, derived = verb from distinct from Active form

English Active	They took the boy to school.
Karo Batak Passive (Woollams 1996:191)	itimai Raja Aceh denga Putri Hijau PASS:wait_for King Aceh still Putru Hijau 'The King of Aceh still waited for Putri Hijau.' *special index used for pronominal A; nominal A is in incorporation position
Upriver Halkomelem Passive (Galloway 1993:426)	tə́s-l-əm θúƛ̓à tə swíyəqə bump_into-ACCID-3SG.PASS she ART man 'She was bumped into by the man.'
Maasai Inverse (Payne et al. 1994:294)	kí-nyál-à ntáy nánú 1/2PL.INV-spoil-PFV.PL 2PL.NOM 1SG.ACC 'You (plural) insulted me.'
Yurok Passive (Robins 1980:363)	neto:ʔmar kelac nowkʷoy-eʔm my.friend 2SG.OBJ care.PASS-2SG.SBJ 'My friend cares for you.'
Welsh Impersonal Passive (Comrie 1977:55)	fe'i lladdwyd gan ddraig PTCL'OBJ killed.PASS by dragon 'He was killed by a dragon.'
Bambara "Passive" (Chris Culy, pers. comm.)	o fo'ra dugutigi fè 3SG greet'CMPL.INTR chief-with 'S/he was greeted by the chief.'
English Passive	The boy was taken to school by his parents.

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Table 6. Cross-linguistic variation in morphosyntactic form of "Passive" constructions.

	Scene	Human Sbj	Other Sbj	Exist	Other	*Total*
events more likely to be under control of human participant ↑ ↓ *events less likely to be under control of human participant*	D8. Cyclist falls/bike falls	15	2	0	2	***19***
	D7. Cyclist hits rock/ bike hits rock	14	5	3	0	***22***
	A4. Picker drops pears/pears drop	1	2	0	0	***3***
	D5. Cyclist loses hat/ hat flies off	2	11	0	0	***13***
	G4. He's missing a basket/basket is missing	2	12	5	0	***19***
	D9. Cyclist spills pears/ pears spill	2	17	0	1	***20***

Table 7. Frequency of verbalization of six unintended human events in the English Pear Film narratives (Chafe 1980). Scenes and intonation units are numbered following Croft (2010b), and ranked according to proportion of speakers using a human Subject construction vs. other Subject construction (indicated by shading of cells). Based on Croft 2021:265, Figure 227.

Coded dependency		**Putative syntactic relation**	**Example**
Relational	flag (adposition, case affix)	predicate-argument, genitive modifier-head	*She ran **to** the store. row **of** trees*
	conjunction (coordinating, subordinating)	relations between clauses	*She ate **and** went to bed; She ate **before** she went to bed.*
Indexical	indexation ("agreement")	predicate-argument, genitive modifier-head, adposition to referring phrase	*He raise**s** macaws.*
Linker (invariant form)		modifier-head	*Bill**'s** brother*

Table 8. Common types of coded dependencies.