The Interaction of Causation and Affectedness in Transitivity

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In this paper I examine the interaction of causation and affectedness in determining the transitivity of a verbal predicate, and propose a restricted system for classifying two argument verbs in terms of how causal and affectedness properties are distributed across their arguments that relies crucially on force-dynamic structure. Work by Hopper and Thompson (1980) has shown that transitivity can be defined in terms of a myriad of factors, including affectedness of the O argument, potency of the A argument, telicity of the predicate, etc. Subsequent work by Tsunoda (1981, 1985, 1999), Blume (1998) and Testelec (1998) has typologized verbs depending on their semantics (though sometimes identifying different classes). Testelec in particular has argued that we can classify verbs by the distribution of features of [+con(trol)] and [+aff(ected)] across participants (i.e. roughly bearing proto-agent and proto-patient properties; Dowty 1991). Furthermore, Blume and Testelec have identified core transitives (e.g. verbs meaning *break*, *make*, *destroy* across languages) as those which maximally distinguish the semantic features of the A and O arguments.

Ostensibly, however, assuming two privative features [+con] and [+aff] for each of two arguments of a verb we might expect to be able to identify up to 16 verb classes across languages. However, this full spectrum of basic predicate types does not appear to be attested, in particular there are no predicate types in which the 0 argument is causal while the A argument is not. In this paper I propose a system that combines Dowty-style proto-role entailments with the force-dynamic event structures of Talmy (1976) and Croft (1990, 1991, 1993, 1998, in prep), which assumes inherent causal asymmetries between co-arguments, as a way of constraining and systematizing the set of possible verb types. I define a participant as [+aff] (a generalization over being changed, moved, impinged, or attained; Beavers 2006) if it bears proto-patient properties. I define a participant as [+cause] if either (a) it bears proto-agent properties or (b) it is causally precedent in the force-dynamic structure. Assuming that all verbs encode a real or coerced causal structure (Croft 1993), several logical possibilities are immediately ruled out, since one participant will always be causal by condition (b) and this will always be the A argument (following Croft 1998). I outline the predicted classes below, focusing on their semantic classification; I discuss also their corresponding morphosyntactic properties in terms of transitivity, but I do not attempt to derive the specific possibilities of each class from the semantics (a separate matter I leave for future work, though see the above references).

Looking first at core transitives, these are verbs in which the A and O arguments are maximally distinguished. One participant is the proto-patient and thus is [+aff]; the other is [+cause] since it is causally precedent (represented by a simplified Croft-style causal chain) and may also have proto-agent properties.

In addition, Testelec identifies verbs in which both participants are [+aff], including *take/pull* where the A simultaneously moves the O and also acquires it (from here on I do not notate the causal chain though it determines [+cause] for all A arguments):

(2)
$$John_{[+cause,+aff]}$$
 took the $book_{[+aff]}$.

Verbs in which the A argument is [+aff] instead of the O include self-directed motion verbs towards a goal or along a path:

(3)
$$John_{[+cause,+aff]}$$
 walked/climbed (up) the mountain [].

These predicates display transitive or intransitive encoding across languages (with the O marked as an oblique), ostensibly due to the less than maximal distinction between the arguments. A fourth class is defined where no participant is [+aff] but the second participant bears proto-agent properties and is thus [+cause]. Blume (1998) identifies such a class as human interaction verbs such as *thank* and *praise*, in

which the A argument is clearly an agent (and causally precedent) but the O argument is a proto-agent in some superevent of the event described by the predicate (e.g. the event for which the O received praise):

(4) John_[+cause] praised/thanked/greeted Bill_[+cause].

According to Blume such predicates tend to show dative marking on the O, again ostensibly due to the non-maximal contrast. We can distinguish three additional classes in which both participants are [+cause], depending on the distribution of [+aff]: verbs in which the O argument is [+aff] (e.g. *help*), verbs in which A argument is [+aff] (e.g. *depend (on)*, where the A is affected in some superevent, following Blume), and verbs in which both A and O are [+aff] (e.g. *fight*; Testelec 1998). Each class admits intransitive encoding across languages, and the latter class also allows various types of reciprocal encoding, corresponding to the symmetry of the thematic roles of each argument:

Another class are verbs in which the A is [+cause] but the O has no features whatsoever, corresponding to perception verbs and activity verbs where the O is a "root" argument that is not affected (Levin 1999):

(6) a.
$$John_{[+cause]}$$
 saw/looked at $Bill_{[]}$ b. $John_{[+cause]}$ wiped the table $[]$.

As Tsunoda (1981, 1985) notes, perception verbs often admit intransitive encodings. Finally, there are two argument verbs that do not describe dynamic events and thus have no causal chain, no proto-agent properties, and no proto-patient properties. These are symmetric predicates like *resemble* as in *John resembled the pope*. Following Croft (1993), though, these are "coerced" into a force-dynamic relationship, in which case the precedent entity is assigned a control feature and no affectedness is assigned (similar to (6)), though either participant may be coerced into this position (cf. also *The pope resembled John*).

In summary, we have distinguish and expanded most of the classes proposed by Testelec and Blume (I give their notation for each class here to indicate which classes they identified and which they did not):

(7)		Featural Distributi	ion+Causal Precedence	;		
	Example	A	О	Testelec	Blume	Note
	make, kill, break	[+cause]	[+aff]	IV/V	I	Core Transitive
	pull, take	[+cause,+aff]	[+aff]	V	I	Transitive?
	walk (to), traverse, search	[+cause,+aff]	[]	???	???	Self-directed motion
	praise, see, resemble (coerced)	[+cause]	[]	VI/VIII	III	Psych/coerced statives
	speak to, ask	[+cause]	[+cause]	I/II/III	II	Interactional, Nom/Dat
	help/aid	[+cause]	[+cause,+aff]	II??	II??	Interactional, Nom/Dat?
	depend (on)	[+cause,+aff]	[+cause]	II??	II??	Interactional, Nom/Dat?
	fight/auarrel with	[+cause.+aff]	[+cause.+aff]	II	II??	Reciprocal

These classes plus the ones ruled out exhaust the 16 possibilities allowed by the distribution of binary [+aff] and [+cause] factors, suggesting that this approach can capture a restricted typology of verbal types. Presumably the exact nature of the proto-agent and proto-patient entailments that determine many of the [+aff] and [+cause] features will determine subclasses of each case, something I address briefly in the talk. Finally, this approach can be extended to single argument predicates as well, where there are no a priori force-dynamic chains. In this case [+cause] and [+aff] are determined solely by proto-role properties, producing three logical types, corresponding to unaccusative, unergative, and stative predicates:

(8) a. The
$$vase_{[+aff]}$$
 broke. b. The winner_[+cause] smiled. c. The winner_[] is happy.

Thus the system proposes here utilizes the notion of causal chains and force-dynamic structure (assumed to underlie all verbal predicates, even when coerced) to constrain the set of possible verb classes. When combined with proto-role properties, this provides a classification that unifies, constrains, and expands previous classifications. I have focused here primarily on semantic classifications. Future work will necessarily involve predicting the morphosyntactic possibilities of each class from the semantics, though already the crucial notion of maximal distinctiveness that underlies transitivity falls out of these classifications.