Towards a typology of transitivity matching
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In *transitivity matching* (**TM**), two verbal elements must match in terms of some transitivity-related property. Based on descriptive (Valenzuela 2003, 2011, 2017; LaPolla 2010; Biondi 2011, 2015) and formal work on TM (Berger 2021), I offer the first comprehensive account of TM, which derives the attested sub-types by cross-cutting *levels of structure-building* – i.e. V vs VP vs VoiceP – with *modes of structure-building* – i.e. complementation vs adjunction.
• **Data:** First, there is **semantic TM**, found in contiguous serial verbs in Saliba (Oceanic; Margetts 1999, 2005), where all verb stems must be either intransitive (1) or transitive (2):

(1) *intr + intr*
Ye-[kamposi]-[dobi]
3SG.S-jump-go.down
'She jumped down'

(2) *trans + trans*
Ya-tupa-[**he**-yoli]-[**he**-gehe]-di
1SG.S-IMPACT-**CAUS**-sink-**CAUS**-be.finished-3PL.O
'I will drown all of them' **Saliba** (Margetts 2006: 66, 76)

This kind of TM is semantic in the sense that the matching reflex on each verb has a semantic effect (Berger 2021): in (2), the causative derives a causative meaning on both V_1 and V_2, entailing exhaustivity with respect to the object. Semantic TM is also found in Tariana (Aikhenvald 2003, 2006). • Second, there is **syntactic TM**, found in e.g. Kashibo (Panoan), where auxiliary-like verbs co-vary with the stem-level transitivity of a lexical verb (Biondi 2011). *pëu* 'begin' is a root transitive, remaining unaltered in (3) and formally intransitivized via the reflexive in (4):
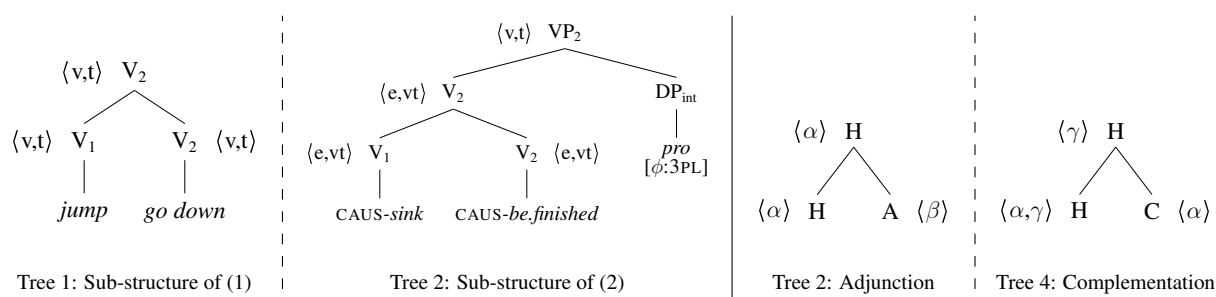
(3) *trans + trans*
[pi-kin]   kana [pëu-i-n]
eat-SS.TRANS 1SG begin-IMPF-1/2P
'I begin to eat'

(4) *intr + intr*
['ux-i]   kana [pëu-**ukut**-i-n]
sleep-SS.INTR 1SG begin-**REFL**-IMPF-1/2P
'I begin to sleep' **Kashibo** (Biondi 2011: 597)

Unlike semantic TM, syntactic TM does not involve a semantic effect on both verbs. While the lexical verb's change in transitivity comes with a change in meaning, the verb 'begin' means the same in both (3) and (4) – that is, the reflexive suffix is semantically vacuous in (4). Syntactic TM also occurs in Shipibo (Valenzuela 2011) and Dulong (LaPolla 2010). • Third, there is what I call **morphological TM**, which is similar to syntactic TM, except that the reflex on the non-lexical element is not morphologically transparent. In Kiowa (Tanoan), there is a modal suffix whose form depends on whether the lexical verb is intransitive (5) or transitive (6):

(5) *intr + intr*
[héíb-é]-gụ̄ụ̄-mɔɔ-[**t!ɔɔ**]
enter-INTR-DISTR-NEG-**MOD**(INTR)
'will not come in at different times / locations'

(6) *trans + trans*
[héíb-e]-[**tɔɔ**]
enter-TRANS-**MOD**(TRANS)
'will bring in' **Kiowa** (Bonet & Harbour 2012: 231)

Gtaʔ (Mahapatra et al. 1989) and Araona (Emkow 2006) also exhibit morphological TM.
Proposal: Following Berger (2021), semantic TM arises if the adjunction rule that builds contiguous serial verbs forces the semantic types of (simplex or complex) verb stems to match. (1) thus combines two simplex unergatives of type ⟨v,t⟩ (Tree 1); and (2) combines two derived transitives of type ⟨e,vt⟩, with the object merged after complex verb formation (Tree 2):

Tree 1: Sub-structure of (1)   Tree 2: Sub-structure of (2)   Tree 2: Adjunction   Tree 4: Complementation

Semantic type-matching is restricted to V-level adjunction configurations because it is only in these – prior to the introduction of arguments – that the grammar can make reference to the transitivity of verb stems in terms of their semantic types, forcing them to match. Merging a head H with an adjunct A does not alter the semantic type of H, since H does not select A (Tree 3); in contrast, the very act of merging a head H with a complement C does alter the semantic type of H because H selects C (Tree 4). Also for this reason, semantic TM cannot arise in complementation. This is confirmed: complex verbs involving complementation in Saliba (Margetts 2004), non-contiguous serial verbs adjoined at VP in Edo (Baker & Stewart 2002), and at VoiceP in Korean (Ko & Sohn 2015) all lack semantic TM. • In the spirit of Wurmbrand & Shimamura (2017), I argue that syntactic TM reflects an *Agree dependency between Voice heads*. Embedded Voice bears a feature [±TRANS], which encodes whether VoiceP contains only a single (internal or external) argument, or both an internal and an external argument, in terms of distinct sets of structure-building features: unaccusative Voice only requires a VP (which itself has an internal argument), while unergative Voice also triggers the merger of an external argument – as both of these induce only one argument, Voice bears [-TRANS] (unaccusatives may contain Voice; Alexiadou et al. 2015); transitive Voice, which additionally has an (ergative or accusative) Case feature and therefore induces two arguments, bears [+TRANS]. See Table 1:

Structure-building features on Voice	Argument structure		[±TRANS]
[•V•<∗CASE∗<•D•]	$DP_{int} + DP_{ext}$	transitive	[+TRANS]
[•V•<•D•]	DP_{ext}	unergative	[-TRANS]
[•V•]	DP_{int}	unaccusative	[-TRANS]

Table 1: Voice and [±TRANS]

$$(7) \quad [u\text{TRANS}] : \begin{cases} [+] & \Leftrightarrow & -\emptyset \\ [-] & \Leftrightarrow & -ukut \end{cases}$$

Some verbs – like *pëu* 'begin' – lexically select a Voice with a feature [uTRANS], which probes for and agrees with a valued [±TRANS] in its complement (8)-(9). [uTRANS] on matrix Voice is spelled out as per (7). The choice of the reflexive for semantically vacuous detransitivization is expected: reflexivization is the least marked intransitivizing strategy in Kashibo (Biondi 2011: 391ff), and cross-linguistically, reflexive morphology occurs in a range of non-active contexts – i.e. the morpho-syntax of Voice may dissociate from its semantics (Alexiadou et al. 2015).

(8) $[_{VoiceP_2}$ *I* [[$Voice_2$ $\boxed{u\text{TRANS:+}}$]]$_{VP_2}$ *begin* ... [$_{VoiceP_1}$ PRO_{ext} [[$Voice_1$ $\boxed{+\text{TRANS}}$]$_{VP_1}$ *eat pro*$_{int}$] ...]   = (3)

Agree

(9) $[_{VoiceP_2}$ *I* [[$Voice_2$ $\boxed{u\text{TRANS:-}}$]]$_{VP_2}$ *begin* ... [$_{VoiceP_1}$ PRO_{ext} [[$Voice_1$ $\boxed{-\text{TRANS}}$]$_{VP_1}$ *sleep*] ...]   = (4)

Syntactic TM must occur via Voice, given that (i) Voice is the locus of transitivity alternations (Nie 2020), and (ii) TM occurs in the absence of (overt) objects (3); it seems restricted to complements (Panoan switch-reference in adjuncts does not track transitivity, but properties of subjects; Camacho 2010, Baker & Souza 2020). • For morphological TM, I follow Bonet & Harbour (2012) that it is not an instance of Agree, but *suppletive allomorphy* which does not require adjacency (5). As allomorphy, it may variably be conditioned by features on V / VP / VoiceP, but is limited to complementation since cases of adjunct-triggered allomorphy are unattested (Weisser 2018, 2019). • This yields the following, unprecedented typology of TM:

Transitivity matching	Semantic effect of reflex		Level of structure-building	Mode of structure-building	Mechanism
Morphological	V_1: ✓	V_2: * (non-transparent reflex)	V / VP / VoiceP	complementation	allomorphy
Syntactic	V_1: ✓	V_2: * (transparent reflex)	VoiceP	complementation	agreement
Semantic	V_1: ✓	V_2: ✓	V	adjunction	type-matching

Outlook: I also **(i)** discuss other cases of semantically vacuous voice as a result of TM, and how these instantiate contextually triggered deponency; and **(ii)** show that VP is special because certain transitivity-related information at this level has either been neutralized (semantic types + internal arguments) or not yet entered the derivation (Voice + external arguments).