The Trivalency of Voice

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Introduction: The typology of Voice has been extensively discussed in the recent literature, where Voice is claimed to be syntactically bivalent. Schäfer (2008), Alexiadou et al. (2015) and Wood (2015) all propose one variant of Voice which introduces an external argument ("active Voice") and another that suppresses it ("non-active Voice"). Following this line of research, the current paper argues that Voice is syntactically trivalent: the content of Voice is defined by the bivalent syntactic feature specifying the presence/absence of a specifier, [±D], which can either be positive, negative, or underspecified. Evidence comes from Hebrew verbal templates and Japanese transitivity suffixes, demonstrating that overt morphological marking clearly tracks the presence/absence of external arguments across various argument structure alternations. We further explore the theoretical possibility that Voice is merely one instance of the abstract functional head i^* proposed by Wood & Marantz (2017).

Voice in non-concatenative morphology: In Hebrew, many verbs appear in the "simple" morphophonological template $XaYaZ$. This template is underspecified with respect to argument structure (Doron 2003, Borer 2013): verbs may be unaccusative (*ratax* 'boiled'), unergative (*rakad* 'danced'), and transitive (*axal* 'ate'). Verbs in $XaYaZ$ often form doublets with the template $heXYiZ$: an unmarked verb in the former, (1), a causative variant in the latter, (2).

Unmarked intransitive and marked transitive verbs sharing the same root:

(1) ha-marak **ratax** ba-sir
     the-soup boiled in.the-pot

    'The soup boiled in the pot.'

(2) ha-jeled {*ratax/hertiax} et ha-marak
     the-boy boiled   ACC the-soup

    'The boy boiled the soup'.

Contemporary Hebrew has between 550–600 verbs in $heXYiZ$, of which over 500 show this alternation (for exceptions see Borer 1991, Doron 2003 or Kastner 2016). The following generalization emerges: verbs in $heXYiZ$ have an external argument.

A similar alternation can be found with the template $niXYaZ$, which spells out many unaccusative verbs (we set aside certain reflexives). A causative verb in $XaYaZ$, (3), often has an inchoative alternation in $niXYaZ$, (4).

Unmarked transitive and marked intransitive verbs sharing the same root:

(3) josi **patax** et ha-ʃa'ar
     Yossi opened ACC the-gate

    'Yossi opened the gate.'

(4) ha-ʃa'ar {*patax/niftax} (me-atsmo)
     the-gate opened   (from-itself)

    'The gate opened (of its own accord)'.

The generalization is that verbs in $niXYaZ$ do not have an external argument. Verbs in $XaYaZ$ are underspecified with respect to the external argument, presumably constrained by the root.

The Trivalency of Voice: We propose that there are three types of Voice, as summarized in (5). This typology of Voice is theoretically predicted on the assumption that features are bivalent, not privative (Harbour, 2011): bivalent features allow the three-way distinction ([+F], [–F], and $\varnothing$), correspondingly generating three types of Voice ([+D], [–D], and $\varnothing$):

(5) **Three types of Voice:**

		Spec,VoiceP	Semantics
a.	**Voice** (underspecified)	Underspecified	$\lambda x \lambda e.\text{Agent}(x,e)$ / $\lambda P_{<s,t>}.P$
b.	Voice$_{[+D]}$ (active)	Realized	$\lambda x \lambda e.\text{Cause}(x,e)$
c.	Voice$_{[-D]}$ (non-active)	Suppressed	$\lambda P_{<s,t>}.P$

These variants of Voice straightforwardly capture the "simple" $XaYaZ$, "causative" $heXYiZ$ and "middle" $niXYaZ$ templates in Hebrew. This system also predicts that the three-way Voice distinction should be overtly realized in languages with concatenative morphology. Japanese is one such language, which enables us to test further predictions of this proposal.

Voice in concatenative morphology: In Japanese, three major subtypes of transitivity alternation have been identified (Jacobsen, 1992; Miyagawa, 1998; Nishiyama, 1998; Volpe, 2005; Harley, 2008): transitivization (koor-as-u vs. koor-∅-u 'freeze'), intransitivization (tsunag-∅-u vs. tsunag-ar-u 'connect'), and equippolent (mawa-s-u vs. mawa-r-u 'turn'). The important generalization is that transitivity suffixes containing /s/ and /r/ are exclusively transitive and intransitive ("Jacobsen's Generalization"), while unmarked verbs can be both (reminiscent of the Hebrew "simple" template). This generalization is further elaborated by the following facts:

Unmarked and marked transitive verbs sharing the same root:

(6) John-ga   posutaa-o **hag**-{∅|as}-ta.
John-Nom poster-Acc peel-Trans-Past
'John removed a poster.'

(7) Kaze-ga   posutaa-o **hag**-{*∅|as}-ta.
wind-Nom poster-Acc peel-Trans-Past
'The wind removed a poster.'

In the examples (6-7), unmarked and marked transitives appear to alternate freely, but non-agentive Causers are only compatible with marked transitives.

Unmarked and marked intransitive verbs sharing the same root:

(8) Syatsu-ga **chijim**-{∅|ar}-teiru.
shirt-Nom shrink-Intrans-Asp
'A shirt has shrunk.' (resultative)

(9) Syatsu-ga **chijim**-{∅|*ar}-teiru.
shirt-Nom shrink-Intrans-Asp
'A shirt is shrinking.' (progressive)

In the examples (8-9), given that unaccusatives and unergatives invoke resultative and progressive interpretations of the aspectual morpheme "teiru", respectively (Tsujimura, 1991), unmarked intransitives can be both unaccusative and unergative, whereas marked intransitives can only be unaccusative. Taken together, marked transitive/intransitive verbs obligatorily realize/suppress external arguments, while unmarked verbs realize external arguments (transitive/unergative) or not (unaccusative).

Beyond Voice: Is this morphological marking specific to Voice? The answer seems to be negative, as evidenced by ditransitive and passive constructions in Japanese:

Ditransitive and passive constructions:

(10) John-ga Mary-ni syasin-o **mi**-se-ta.
John-Nom Mary-Dat picture-Acc see-Trans-Past
'John showed a picture to Mary.'

(11) Syasin-ga (Mary-ni) **mi**-rare-ta.
picture-Nom Mary-by see-Intrans-Past
'A picture was seen (by Mary).'

Observe here that the same transitivity suffixes containing /s/ and /r/ also derive ditransitives (10) and passives (11) from transitive bases. Given that ditransitives and passives have been analyzed with Appl (Pylkkänen, 2008) and Pass (Bruening, 2013), this observation strongly suggests that transitivity suffixes morphologically realize not only Voice$_{[+D]}$/Voice$_{[-D]}$ but also Appl/Pass. Following Wood & Marantz (2017), we propose that argument-introducing functional heads may be unified under $i^*_{[+D]}$ (introducing an external argument), $i^*_{[-D]}$ (suppressing an external argument), and the default i^* (underspecified).

Conclusion: In summary, this paper has argued based on Hebrew verbal templates and Japanese transitivity suffixes that Voice is syntactically trivalent. We suggest that some languages — including Hebrew and Japanese — realize the three-way distinction overtly. Existing crosslinguistic work making a two-way distinction between active and non-active Voice (e.g. Alexiadou et al. 2015) may now be re-examined: do languages cut space of Voice into **Voice** vs. Voice$_{[-D]}$ or **Voice** vs. Voice$_{[+D]}$, and can further parallels be drawn with applicative, causative and passive constructions? Moreover, the precise thematic role (Agent, Cause, etc.) introduced by each Voice head remains to be further investigated.

Selected References: **Alexiadou, Anagnostoupoulou & Schäfer**. 2015. *External Arguments in Transitivity Alternations*, OUP.; **Bruening**. 2013. *By Phrases in Passives and Nominals*, *Syntax*.; **Pylkkänen**. 2008. *Introducing Arguments*, MIT Press.; **Schäfer**. 2008. *The Syntax of (Anti-)Causatives*, John Benjamins.; **Wood & Marantz. 2017**. 2017. The interpretation of external arguments. In *The Verbal Domain*, OUP.