

### Gradable predicates as universally degreeless

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**Introduction.** Beck et al (2010) propose the Degree Semantics Parameter (DSP), by which languages vary in the lexical semantics of their gradable predicates (GPs): +DSP languages (e.g., English) have GPs with a degree argument, while GPs in -DSP languages (e.g., Motu) lack one. This proposal has led to many investigations of gradability and comparison in a range of less-studied languages, showing that while some fit well into this binary division (e.g., Washo, Bochnak 2015), others do not (see below). We argue against the DSP as a binary macro-parameter on open class GPs. Instead, we argue for the stronger universal that GPs never introduce degrees in any language. Rather, degrees are introduced by functional elements like comparative morphemes, measure phrases, gradable modifiers, etc. If a language lacks *all* such elements (e.g., Washo per Bochnak 2015), then it is completely degreeless. Languages may otherwise vary in the number of degree morphemes they grammaticalize, and which syntactic categories can be targeted by degree morphology; both of these behaviors are attested cross-linguistically.

**Varieties of degreelessness.** Several languages have recently been argued to be degreeless, but nevertheless have one or more putative degree morphemes. For example, Kunbarlang (Gunwinyguan; Kapitonov 2019) lacks all degree morphemes but has measure phrases (shown in (1)), while Warlpiri (Pama-Nyungan; Bowler 2016) is reported to be degreeless but has a degree demonstrative (not shown).

(1) *Nga-karrme kaburrk la kaburrk djanga man-kukkarlyung mayi kundulk.*

1SG.NF-getNP **two** CONJ **two** **foot** III-long NM.III tree

‘I’ve got a four foot long stick.’

(Kunbarlang; Kapitonov 2019)

Perhaps yet more strikingly, Nez Perce (Penutian; Deal & Hohaus 2019) has also been argued to be degreeless, despite having a grammaticalized comparative morpheme *qetu* as shown in (2), because it lacks certain degree constructions such as differential comparatives (cf. von Stechow 1984). Moreover, even Motu (Austronesian; Beck et al. 2010), the original motivation for the DSP, lacks many degree constructions but has an *exceed*-comparative that permits differential phrases (shown in (3)).

(2) *K hii-wes qetu kuhet S-kin’ix.*

K 3-is MORE tall S-from

‘K is taller than S.’ (Deal & Hohaus 2019)

(3) *M na 2cm ai F ena lata e hanaia.*

M TOP 2cm by F his height 3 exceed

‘M is 2 cm taller than F.’ (Beck et al. 2010)

Furthermore, it has been shown that languages vary according to which grammatical categories may combine with degree morphology. In both Tswefap (Narrow Grassfields; Clem 2019) and Tlingit (Na-Dene; Cable 2018), some gradable predicates are adjectives, while others are verbs. In both languages, only gradable verbs interact with degree morphology, while adjectives do not, as shown in (4) for exceed comparatives in Tswefap. This is unexpected under a language-wide DSP parameter setting.

(4) \**Sesege (n-)tchege (mbeh wohloh) mi a tseuk nkumnkum.*

**tall** CNS-pass everyone person FACT eat fufu

Intended: ‘The taller/tallest person ate fufu.’

(Clem 2019)

The emerging picture is one of a range of languages displaying mixed behavior with respect to their ‘degree of degreelessness’, which researchers have attempted nevertheless to fit into the +/-DSP dichotomy (see for example Pearson 2009 and Davis & Mellesmoen 2019). In our view, however, this observed variation casts strong doubt on the status of degreelessness as a parameter: Any instance of even one case of degree use should imply a +DSP parameter setting, masking over much cross-linguistic variation.

**Degreefulness is functional.** We propose that degrees are never introduced by GPs themselves, but rather by functional degree morphology. Languages then vary not in the lexical semantics of their GPs, but instead in the number of degree morphemes grammaticalized, ranging from many (e.g., English), few (e.g., Nez Perce), to even none (e.g., Washo). Formally, this analysis is consistent with a wide range of compositional and ontological analyses. Here we follow (the spirit of) Parsons (1990), Wellwood (2015, 2019), and others in giving a Davidsonian analysis to GPs, assuming that they denote relations between individuals and states, as for English *tall* in (5a). Following Baglini (2015) and Wellwood (2019), states are ordered by “intensity” (implemented formally as a “size ordering”, as in Francez and Koontz-Garboden 2017:39). We assume, following Wellwood (2019:Chapter 4), that states of individuals can be measured, so that the measure ( $\mu$ ) of a state returns a degree on a scale. Such measures are not included in the denotations of GPs, but rather are introduced by functional morphosyntax. For example,

measure phrases (e.g., *four feet* in (5b)) take a GP like *tall*, and return a relation between individuals and states such that the individuals hold a state measuring at least the measure introduced by the measure phrase. On this view then, phrasal comparatives as in English or Nez Perce take a GP as an argument, and compare the measures of the states ( $\mu(s)$ ) held by two different individuals. We give a denotation for phrasal *-er* in (5c); the full translation of the Nez Perce example in (2) is given in (5d).

- (5) a.  $\llbracket \text{tall} \rrbracket = \lambda x \lambda s. \text{holder}(s, x) \ \& \ \text{tall}'(s)$   
b.  $\llbracket \text{four feet} \rrbracket = \lambda P_{(e(vt))} \lambda x \lambda s. P(x, s) \ \& \ \mu(s) \geq 4ft$  cf. (1)  
c.  $\llbracket \text{-er}_{\text{phrasal}} \rrbracket = \lambda P_{(e(vt))} \lambda x \lambda y. \exists s, s' [P(x, s) \ \& \ P(y, s') \ \& \ \mu(s') > \mu(s)]$  cf. (2)  
d.  $\llbracket (2) \rrbracket = 1$  iff  $\exists s, s' [\text{holder}(S, s) \ \& \ \text{tall}'(s) \ \& \ \text{holder}(K, s') \ \& \ \text{tall}'(s') \ \& \ \mu(s') > \mu(s)]$

As there do exist robust implicational hierarchies with degree expressions (e.g., Bobaljik’s 2012 *Containment Hypothesis*), we note that we argue here only against those predicted by the DSP, but falsified by data like those above. Universally attested implications may be driven by various factors, e.g., semantic, morphosyntactic, or diachronic (which we do not address here due to reasons of space).

**The positive form.** The proposed analysis is consistent with a range of approaches to positive degree constructions (e.g., *Kim is tall*). That is, positive degree inferences may either be tied to a degree semantics and therefore be introduced by null functional morphology (POS, as standard in the degree literature since Cresswell 1976), or they do not rely on a degree semantics and arise through pragmatic strengthening (Rett 2015), contextual restriction of existential quantification over the domain of states ( $\exists^D$ ; cf. Francez and Koontz-Garboden 2017), or in some other way not inherently tied to degrees; see (6). Both general approaches are consistent with our analysis, though the latter maintains a truly degreeless analysis, which is more appealing for languages like Washo that otherwise lack degree constructions.

- (6)  $\llbracket \text{Kim is } \exists \text{ tall} \rrbracket = 1$  iff  $\exists^D s [\text{holder}(K, s) \ \& \ \text{tall}'(s)]$

**Crisp judgments.** Our analysis moreover also captures variation in crisp judgment effects, i.e., comparison of two objects that are very similar in measurement (Kennedy 2007). Conjoined comparison constructions in e.g., Washo or Motu are infelicitous in crisp judgments contexts, since such comparatives do not contain any degree morphology and are based on the interpretation of the vague positive form. However, for any language with a grammaticalized comparative, e.g., as in (5c), we predict crisp judgments to be possible via introduction of degrees, which is indeed the case in languages like English and Nez Perce. On this view, the mixed DSP behavior of Nez Perce is no longer puzzling: Languages can have an explicit comparative supporting crisp judgments without having other degree phrases, which would explain the lack of measure phrases and differential comparatives in the language.

**Conclusion and outlook.** In sum, we propose that the observed variation in degreefulness across languages is explained if degrees are introduced by functional morphology, rather than GPs themselves. In doing away with the macro-parametric DSP in this way, our analysis gives rise to several welcome consequences. **First**, we account for the range of languages that grammaticalize one or few degree morphemes: Languages can develop some degree morphemes without grammaticalizing an entire degree system (e.g., Kunbarlang, Motu, Nez Perce). **Second**, we account for languages where only a subset of GPs interact with degree morphology (e.g., Tswefap, Tlingit), as the functional degree morphology controlling degree behavior can simply be picky about the syntactic categories it selects for. **Third**, our proposal also makes sensible predictions about language change, e.g., of the kind discussed for Samoan by Hohaus (2018): For a language to change from being degreeless to degreeful no longer requires a wholesale semantic reanalysis of a large swath of open class vocabulary. Rather, it comes as a consequence of reasonably well-understood processes of grammaticalization, such as a plausible bleaching and semantic change of a directional particle to an explicit comparative marker, as has happened in Samoan (and likely also related Fijian, Hanink 2020). **Fourth**, the observation due to Hohaus et al (2014) that children start out -DSP and only move to +DSP as they acquire their first language is captured through the gradual acquisition of functional vocabulary, rather than a reanalysis of GPs. **Finally**, our analysis is in principle compatible with those that aim to remove degrees from the semantic ontology altogether (e.g., Doetjes et al. 2009, van Rooij 2011). Insofar as the semantics of comparison, measure phrases, etc., can be implemented without degrees, then functional morphemes also need not introduce them (though some constructions like differential comparatives (von Stechow 1984) would likely still need a degree semantics in languages having them; see also Wellwood 2019).