Universal markedness in gradable adjectives revisited
The morpho-semantics of the positive form in Arabic

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Abstract Cross-linguistically, comparative-form adjectives (like English taller) are consistently derived from (or in many languages identical to) their positive-form counterparts (like English tall). This fact stands in tension with prevailing formal semantic treatments of gradable adjectives as degree relations that require extra semantic machinery not only for comparative predication but also for positive predication; for the latter, scholars typically posit a null morpheme or type-shift pos. In this short article, we review morphophonological evidence showing that in Arabic, comparative-form adjectives (like aTwal ‘taller’) are of equal complexity with their positive-form counterparts (like Tawiil ‘tall’), both derived from a common tri-consonantal root (in this case $\sqrt{Twl}$), rather than one word being derived from the other. This raises the tantalizing possibility of Arabic becoming the first documented case of a language overtly realizing POS, with adjectives like Tawiil consisting of a degree-relation-denoting root and a POS-denoting template. We nonetheless conclude (albeit tentatively) that such an analysis is probably wrong, given (a) the idiosyncrasy in the phonological shape that the putative POS-denoting template takes across different adjectives, (b) the appearance of the same templatic shapes in non-adjectives, and (c) the appearance of adjectives like Tawiil in non-POS environments. We thereby uphold the generalization that no language realizes POS overtly. We close with a brief look at nominalized forms of gradable adjectives in Arabic and offer some preliminary remarks on the broader prospects of semantic de-composition for gradable adjectives, engaging with recent work on cross-linguistic variation in the grammar of property concepts.

Keywords Gradability and comparison · Gradable adjectives · Property concepts · Morpho-semantics · Templatic morphology · Arabic

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1 Introduction

Two well studied uses of gradable adjectives are the so-called positive use exemplified in (1), whereby the individual named by the subject is asserted to stand out relative to some vague, context-dependent threshold along the dimension named by the adjective, and the comparative use exemplified in (2), whereby the individual named by the subject is asserted to exceed the standard of comparison named by the than-constituent along the dimension named by the adjective.

(1) John is tall. \text{positive}

(2) John is taller than Bill. \text{comparative}

Grano (2012) articulates a well known tension between prevailing formal semantic treatments of sentences like (1)–(2) and their observed cross-linguistic morphosyntactic behavior. On the semantic end, a popular approach holds that gradable adjectives denote relations between degrees and individuals (type \langle d, \langle e, t \rangle \rangle), as in (3).

\begin{equation}
\text{[tall]} = \lambda d \lambda x. \text{height}(x) \geq d
\end{equation}

(i.e., tall denotes a relation between degrees d and individuals x that holds iff x’s degree of height meets or exceeds d.)

This approach has as a consequence that a gradable adjective is not usable as a predicate unless something special happens to it to yield a type \langle e, t \rangle function. In comparative sentences like (2), the comparative suffix -er can be identified as the functor that inputs the gradable adjective as well as the than-constituent so as to yield a type \langle e, t \rangle function. In the implementation in (4), for example, the comparative morpheme interacts with the other pieces of the sentence to yield the truth conditions in (5).

\begin{equation}
[\text{-er}] = \lambda g \langle d, \langle e, t \rangle \rangle \lambda x \lambda y. \exists d [g(d)(y) \land \neg g(d)(x)]
\end{equation}

\begin{equation}
[\text{-er}]/[[\text{tall}]]/[[\text{than Bill}]]/[[\text{John}]] = \exists d [\text{height}(j) \geq d \land \neg \text{height}(b) \geq d]
\approx \text{ ‘There is some degree } d \text{ such that John’s height meets or exceeds } d \text{ and Bill’s height does not meet or exceed } d.’
\end{equation}

\footnote{See, among many others, Cresswell (1976); von Stechow (1984); Heim (1985). The tension described here applies as well to the measure function (type \langle e, d \rangle) analysis of gradable adjectives (Bartsch and Vennemann 1973; Kennedy 1999, 2007) as well as Moltmann’s (2009) trope-based semantics. Approaches to gradable adjective semantics that do not encounter the tension described here include the vague predicate analysis (Kamp 1975; Klein 1980) as well as Wellwood’s (2014) approach in which gradable adjectives denote predicates of states. It has also been suggested that whether or not gradable adjectives have a degree-based semantics may be subject to cross-linguistic variation (Beck et al. 2009; Bochnak 2015); see also Bogal-Allbritten (2013) for discussion of the degree-based approach in a cross-linguistic setting.}

\footnote{This approach to comparative semantics is based roughly on Steuren (1973); Klein (1980); Schwarzschild (2008). For the sake of simplicity and because it is orthogonal to the concerns of this paper, we assume controversially that than is semantically vacuous and that the standard of comparison is individual-denoting. See Kennedy (2009) for discussion of the semantic type of the standard and see Alrenga et al. (2012) for an approach to comparative semantics in which both the comparative morpheme and the standard marker are contentful.}
But in positive sentences like (1), one is forced to posit a type-shift or inaudible morpheme \( \text{POS} \) with a denotation along the lines of (6) in order to yield truth conditions like (7) for the sentence in (1).\(^3\)

\[
(6) \quad \text{[[pos]]} = \lambda g(d, e, t) \lambda x. \exists d[g(d)(x) \land d > d_c]
\]

\[
(7) \quad \text{[[pos]]}([[\text{tall}}])([[\text{John}}]) = \exists d[\text{height}(j) \geq d \land d > d_c]
\]

≈ ‘There is some degree \( d \) such that John’s height meets or exceeds \( d \) and \( d \) exceeds a contextually determined threshold \( d_c \).’

Turning to the cross-linguistic morphosyntactic side, Grano (2012) observes that no language has been convincingly shown to overtly realize the putative \( \text{POS} \) morpheme in (6) (a fact also independently observed by Bobaljik 2012:32, note 5 in his extensive cross-linguistic survey of the morphology of gradable adjectives). Grano (2012) generalizes that languages fall into one of two patterns illustrated in Table 1. Some languages behave like English in that the positive form is morphosyntactically basic and the comparative form is derived from it either via an affix like English \(-\text{er}\) (as in Irish) or periphrastically via a word like English \(\text{more}\) (as in French). And in many languages, there is no audible difference between positive and comparative forms; the syntax disambiguates (as in Japanese).

<table>
<thead>
<tr>
<th>Positive form</th>
<th>Comparative form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irish ard</td>
<td>arda</td>
<td>‘tall’/’taller’</td>
</tr>
<tr>
<td>French grand</td>
<td>plus grand</td>
<td>‘tall’/’taller’</td>
</tr>
<tr>
<td>Japanese takai</td>
<td>takai</td>
<td>‘tall’/’taller’</td>
</tr>
</tbody>
</table>

In light of this cross-linguistic picture, Grano ventures the hypothesis in (8).

\[
(8) \quad \text{Universally, the comparative form of a gradable adjective is derived from or identical to its positive form. (adapted from Grano 2012:515)}
\]

The hypothesis in (8) makes the predictions in Table 2 concerning possible and impossible derivational relationships between positive and comparative forms cross-linguistically. First, it should be possible to find languages in which the positive and comparative forms are identical (Pattern A), and this is indeed the case, as we saw for Japanese. Second, it should be possible to find languages in which the comparative form is derived from the positive form (Pattern B), and this is also indeed the case, as we saw for English, Irish, and French. But it should be impossible to find a language in which the comparative form is basic and the positive form is derived from it (Pattern C), and it should also be impossible to find a language in which both the positive and comparative forms are independently derived from a common base (Pattern D).\(^4\)

\[^3\] See especially Cresswell (1976); von Stechow (1984); Kennedy (1999, 2007). See also Rett (2014) for a reformulation of positive semantics in terms of evaluativity.

\[^4\] Grano explicitly recognizes the predictions concerning Patterns A, B, and C, but he does not explicitly recognize the hypothetical Pattern D or what his hypothesis would predict about it. (And the labeling of these various scenarios as Patterns A–D is not Grano’s; we coin this labeling convention here for expository convenience.) Somewhat ironically, Grano uses Arabic
Table 2 Predictions of (8)

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Positive form</th>
<th>Comparative form</th>
<th>Prediction</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern A</td>
<td>A</td>
<td>A</td>
<td>Possible</td>
<td>Japanese</td>
</tr>
<tr>
<td>Pattern B</td>
<td>A</td>
<td>DERIV(A)</td>
<td>Possible</td>
<td>English, Irish, French</td>
</tr>
<tr>
<td>Pattern C</td>
<td>DERIV(A)</td>
<td>A</td>
<td>Impossible</td>
<td></td>
</tr>
<tr>
<td>Pattern D</td>
<td>DERIV1(A)</td>
<td>DERIV2(A)</td>
<td>Impossible</td>
<td></td>
</tr>
</tbody>
</table>

Grano’s (2012) focus is on an apparent example of a Pattern C language. Superficially, Mandarin instantiates the hypothetically impossible Pattern C, in that a matrix-level declarative sentence with a bare adjectival predicate has a comparative semantics and is felicitous only in a context that supplies a standard of comparison, as in (9). To convey the positive meaning, one must add *hen*, which is ordinarily glossed as ‘very’ but does not necessarily carry an intensifying function in examples like (10).5

(9)  Zhangsan *gao*.  
Zhangsan tall  
‘Zhangsan is taller (than someone known from context).’

(10) Zhangsan *hen* *gao*.  
Zhangsan very tall  
‘Zhangsan is tall.’

But, Grano argues, once the full range of data is considered, Mandarin is actually best analyzed as a Pattern A language, masked by a language-specific syntactic requirement that the complement to Tense be a(n extended) verbal projection. In (9), an inaudible comparative morpheme satisfies this requirement, whereas in (10), the grammar recruits the semantically bleached intensifier *hen* to approximate positive semantics in a way that satisfies the selectional requirements of Tense. Grano’s independent evidence for this proposal comes from the observation that bare adjectives in Mandarin do carry positive semantics when Tense is not in the immediate structural vicinity of the adjective (such as when the adjective is used attributively as an adnominal modifier) and when other functional material intervenes between Tense and the adjectival predicate (such as negation).

The starting point for this short paper concerns Pattern D, which Grano implicitly rules out via (8) but does not explicitly discuss. In a series of papers, Davis (2016a; 2016b; To appear) has shown that comparative-form gradable adjectives in Arabic, exemplified by *aTwał* ‘taller’ in (11), are in fact not derived from their positive-form counterparts, exemplified by *Tawîl* ‘tall’ in (12).6 Instead, both the positive and the comparative forms are derived from a common

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5 Aside from Grano (2012), this phenomenon is also discussed and analyzed by Sybesma (1999); Huang (2006); Gu (2008); Liu (2010); He and Jiang (2011). Kennedy and McNally (2005a:350, note 5) cite Mandarin as evidence for the claim that “in some languages . . . the positive form is morphologically marked.”

6 We transliterate Arabic using loosely IPA-based conventions, except for pharyngealized consonants for which we use capital letters: /T/, /D/, /S/, /Z/; and except for /ʃ/ and /y/ which replace IPA /ʃ/ and /ʒ/, respectively.
tri-consonantal root (in this example, \(\sqrt{T}w\)). In other words, neither word type is derived from the other and they are equal in morphological complexity. At issue, then, is whether Arabic thereby falsifies Grano’s hypothesis and challenges the claim that no language overtly realizes pos.

(11) Ahmad aTwal min Basem.  
Ahmad taller from Basem  
‘Ahmad is taller than Basem.’

(12) Ahmad Tawiil.  
Ahmad tall  
‘Ahmad is tall.’

In what follows, we review Davis’s data and argumentation (section 2), and then turn in section 3 to the question of whether non-comparative forms like Tawiil can be decomposed into a degree-relation-denoting root and a pos-denoting template. We ultimately conclude (albeit tentatively) that such an analysis is probably wrong, given (a) the idiosyncrasy in the phonological shape that the putative pos-denoting template takes across different adjectives, (b) the appearance of the same templatic shapes in non-adjectives, and (c) the appearance of adjectives like Tawiil in non-pos environments. These considerations point toward the conclusion that Arabic is underlyingly a Pattern B language after all, masked by the fact that roots in Arabic must be fit into phonotactically licit shapes in order to be useable as words. In a sense we thereby broaden the boundary of what should be considered a Pattern B language, so that it includes languages wherein positive-form adjectives are indeed complex but whose complexity cannot be identified as the expenence of positive semantics. A true Pattern D language — wherein positive-form adjectives are complex and this complexity can be identified as the expenence of positive semantics — remains a distinct and logically possible but as yet unattested option. This study of Arabic thereby complements Grano’s (2012) study of Mandarin in showing that a superficial counterexample to a robust cross-linguistic trend dissolves upon close scrutiny, reinforcing the hypothesis that no language overtly realizes pos and potentially challenging the degree relation analysis of gradable adjectives. We close with a brief look at nominalized forms of gradable adjectives in Arabic and offer some preliminary remarks on the broader prospects of semantic de-composition for gradable adjectives, engaging with recent work (especially Francez and Koontz-Garboden 2015, To appear; Menon and Pancheva 2014) on cross-linguistic variation in the grammar of property concepts.

2 The morphology of the positive and comparative forms in Arabic

Debate persists in Arabic linguistics over whether word formation processes are root-based (as in McCarthy 1981; Prunet et al. 2000, and others) or stem-/word-based (as in McOmber 1995; Ratcliffe 1998; Bennamoun 1999, and others). Whereas plural formation and verbal morphology both seem to support a stem-/word-based approach (see Davis 2016a for a review of the evidence), Davis (2016a,b, To appear) argues that comparative formation for gradable adjectives is best analyzed as a root-based process.

Some sample forms from Egyptian Arabic, taken from Davis (2016a), are shown in Table 3. A clear pattern emerges: like many words in Arabic, the positive forms
in Table 3 each contain three (root) consonants. And the comparative form can be described as fitting these three consonants into the template aCCaC, where the C’s stand for the consonants of the positive form with linear precedence preserved. (Hallman 2016, in a recent paper on superlatives in Syrian Arabic, draws the same conclusion.) This observation lends itself to the hypothesis that the aCCaC template is a morpheme responsible for comparative semantics, just like English -er/more.

Table 3 Some positive and comparative forms of gradable adjectives in Egyptian Arabic

<table>
<thead>
<tr>
<th>Positive form (masc. sg.)</th>
<th>Comparative form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kibiir</td>
<td>akbar</td>
<td>‘big’/‘bigger’</td>
</tr>
<tr>
<td>b. şaaTir</td>
<td>aˇ Tar</td>
<td>‘clever’/‘more clever’</td>
</tr>
<tr>
<td>c. wihiš</td>
<td>awhaš</td>
<td>‘bad’/‘worse’</td>
</tr>
<tr>
<td>d. Tawiil</td>
<td>aTwal</td>
<td>‘long’/‘longer’</td>
</tr>
<tr>
<td>e. SaQb</td>
<td>aSQab</td>
<td>‘difficult’/‘more difficult’</td>
</tr>
</tbody>
</table>

As a morpheme, one might expect the aCCaC comparative template to exhibit phonologically predictable allomorphs, and Davis (2016a) shows that this is indeed the case. Positive forms that end in a glide such as hılw (masc sg.)/hılw-a (fem. sg.) ‘sweet’ and waaTı (masc sg.)/waTy-a (fem. sg.) ‘low’ have comparative forms ahla ‘sweeter’ and awTa ‘lower’ respectively, rather than *ahlaw and *awTay. This follows from Broselow’s (1976) generalization that Egyptian Arabic multisyllabic content words disallow word-final vowel-glide sequences, and it means that the aCCaC comparative template has aCCa as a phonologically conditioned allomorph.

In another vein, positive forms whose second and third consonant are identical such as şidiid ‘strong’ and xafiif ‘light’ have comparative forms aˇ sadd ‘stronger’ and axaff ‘lighter’ respectively. Thus, aCaCC exists as another allomorph of aCCaC, conditioned by identity of the second and third root consonants. (A partial exception is gidiiid ‘new’/‘recent’, for which agdad is much more common than agadd as the comparative form. Davis 2016a,b notes that this may be due to homophony avoidance, since gadd ‘serious’ has the comparative form agadd ‘more serious’.)

Against this backdrop, Davis (2016a) outlines three pieces of evidence that the comparative forms are derived directly from the tri-consonantal roots rather than from the positive-form words. First, some positive-form words exhibit affixal consonants such as the derivational prefix m- in mu-naasib ‘appropriate’, the derivational suffix -n in kaslaan ‘lazy’, and the infinal geminate glide -yy- in ru-fayyaš ‘thin’. Crucially, these affixes are absent from the respective comparative forms ansab ‘more appropriate’, aksal ‘lazier’ and arfaš ‘thinner’, respectively. This stands in contrast to what one finds for plural formation in the nominal domain, where for example the m-prefixed singular form ma-ktab ‘office’ has as its plural form the similarly prefixed ma-kaatib ‘offices’.

7 Positive forms in Arabic show gender and number agreement. Comparative forms are invariant.

8 According to an anonymous reviewer, the final vowels in ahla ‘sweeter’ and awTa ‘lower’ should be long (i.e., the forms should be ahlaa and awTaas respectively). But here we simply follow the transcription indicated in Davis’s (2016a) sources, which include especially Badawi and Hinds 1986.
A second piece of evidence for the root-based nature of comparative formation comes from adjectives in which an underlying root glide undergoes a phonological change in the positive form but resurfaces in its underlying form in the comparative. For example, the positive form *baayiZ* ‘spoiled’ has underlying root consonants /b/, /w/, and /Z/. We know that the second root consonant is /w/ rather than /y/ because of the verbal form *bawwaZ* ‘to spoil’, and the appearance of [y] in the positive form is predictable from a morphophonological rule that converts /w/ to [y] before /i/. Crucially, the corresponding comparative form is *abwaZ* ‘more spoiled’. This is expected if the comparative is formed from the underlying tri-consonantal root but unexpected if the comparative is formed from the positive-form word.

A third and final piece of evidence that comparative forms are not derived from positive forms is that there are a handful of comparative forms that do not seem to have any corresponding positive form. Davis (2016a) offers three examples: *aSwab* ‘*more correct*’, whose expected positive counterpart *Saayib* does not occur in Egyptian Arabic; *azwa*P* ‘*more polite*’, whose only attested possible positive counterpart *zoo*P is a noun rather than an adjective; and *aèaPP* ‘*more entitled*’, whose only attested possible adjectival positive counterpart *èaPiPi* means ‘*genuine*’ rather than ‘*entitled*’. The existence of such gaps is expected if comparative formation does not rely on a pre-existing positive form.

### 3 The morpho-semantics of the positive form

The evidence presented in the previous section that Arabic comparative formation is root-based readily lends itself to a semantic analysis in which the tri-consonantal roots of gradable adjectives are morphemes that denote degree relations, as exemplified in (13) for the root associated with *Tawiil* ‘tall’, and the comparative template aCCaC is a morpheme that achieves comparative semantics, as in (14).

\[(13) \quad [[\sqrt{Twi}]] = \lambda d \lambda x. \text{height}(x) \geq d\]

\[(14) \quad [[aCCaC]] = \lambda g, (d, (e, t)) \lambda x \lambda y. \exists d [g(d)(y) \land \neg g(d)(x)]\]

These morphemes work together to ensure that a sentence like (15) has a meaning like (16), just like on the approach sketched for English in the introduction.

(15) Ahmad aTwal min Basem.  
Ahmad taller from Basem  
‘Ahmad is taller than Basem.’

(16) \[[[aCCaC]]([[\sqrt{Twi}]]([[\text{min Basem}]]))([[\text{Ahmad}]]))  
= \exists d [\text{height}(h) \geq d \land \neg \text{height}(a) \geq d)]  
\approx ‘There is some degree d such that Ahmad’s height meets or exceeds d  
and Basem’s height does not meet or exceed d.’

By parity of reasoning, it then becomes very tempting to hypothesize that in a sentence like (17), the word shape associated with the positive form *Tawiil* ‘tall’, namely CaCiC, is a morpheme expressing positive semantics, as in (18). In what follows, we will call this the ‘templatic POS hypothesis’.

 Assigning the root a type \<(d, (e, t))\> meaning may in fact be an oversimplification, since many of the tri-consonantal roots found in gradable adjectives also appear in other words whose meanings would be difficult to derive from a type \<(d, (e, t))\> base. But we abstract away from this issue here and return to it in section 4 below.
(17) Ahmad Tawiil.
Ahmad tall
‘Ahmad is tall.’

(18) **The Templatic POS Hypothesis:**

\[
[[\text{CaCiiC}]] = \lambda g_{(d, (e, t))} \lambda x. \exists d[g(d)(x) \land d > d_c]
\]

The templatic POS hypothesis would allow us to derive the meaning of (17) in a compositionally transparent way, similarly to how we handled English in the introduction but with the difference that in Arabic, the POS morpheme is overtly realized as the templatic shape CaCiiC, as in (19).

(19) \[
[[\text{CaCiiC}}][[[\sqrt{T}\text{wil}}]][[[\text{Ahmad}}]] = \exists d[\text{height}(h) \geq d \land d > d_c]
\]

\approx ‘There is some degree d such that Ahmad’s height meets or exceeds d and d exceeds a contextually determined threshold d_c.’

If this hypothesis proved to be correct, it would have rather far-reaching implications for the theoretical tension described in the introduction: Arabic would be the first language shown to overtly realize the POS morpheme, thereby lending support for those analyses of gradable adjective semantics that rely on such a morpheme.

As it happens, however, three considerations — while not absolutely decisive — lead us to be rather skeptical of the templatic POS hypothesis. The first two considerations are morphological and have to do with the idiosyncrasy in the phonological shape that the putative POS-denoting template takes across different adjectives and the appearance of the same templatic shapes in non-adjectives. The third consideration is syntactic-semantic and has to do with the appearance of adjectives like Tawiil in non-POS environments.

### 3.1 Morphological considerations

The first consideration has to do with the distribution of shapes that would have to be identified as realizations of POS on this kind of approach. A glance at the ‘Positive form’ column of Table 3 above reveals that positive forms come in at least five word shapes, listed in (20). Unlike the comparative template aCCaC and its phonologically predictable allomorphs aCCa and aCaCC, the distribution of the shapes in (20) across tri-consonantal roots does not appear to be predictable along any dimension, phonological or otherwise. The distribution of shapes thus bears the hallmark of a lexically idiosyncratic strategy for fitting a tri-consonantal root into a phonotactically licit shape rather than a form that could be identified as a contentful morpheme.

(20) a. CiCiiC
b. CaaCiC
c. CiCiC
d. CaCiiC
e. CaCC

Second, the shapes in (20) are not confined to gradable adjectives: most if not all of them can also be found in nouns, such as bariid ‘mail’ (shape (20-d))
and kaatib ‘writer’ (shape (20-b)). The CaCC shape in particular is quite common for nouns, e.g., faDI ‘favor’. It does seem to be the case that CiCiiC is used overwhelmingly for adjectives, but even here we find exceptions, such as zimiil ‘companion’.

It is also relevant to ask whether the shapes in (20) are found in non-gradable adjectives, which by hypothesis do not combine with POS. Interestingly, Davis (To appear) shows that some non-gradable adjectives in their masculine singular form bear the templatic shape of a comparative, even though their syntax makes it clear that they are not used comparatively. This is particularly apparent for basic color terms (abyaD ‘white’, axDar ‘green’, ahmar ‘red’) and terms for physical conditions (e.g., ahwal ‘cross-eyed’, akam ‘speechless’, aSamm ‘deaf’) (cf. also Heath 2003 for a similar observation). This state of affairs makes it tempting to analyze the aCCaC template not as a comparative morpheme but as a semantic ‘elsewhere’ for adjectives, the complement to POS, or perhaps even an overt “anti-POS” morpheme in complementary distribution with a silent POS counterpart. But such an approach would be difficult to square with at least some of the data in (21)–(27) discussed below. So we leave this as an interesting issue to address in future work.

The idiosyncrasy in the word shapes associated with gradable adjectives, as well as the appearance of these same shapes in words other than gradable adjectives, militate against the templatic POS hypothesis. But not fatally so: we see no conceptual barrier to the existence of a functional morpheme that has multiple exponents whose choice is idiosyncratic to the root it combines with and whose shapes happen to be homophonous with other semantically unrelated morphemes or word shapes. This would just be the combination of two familiar phenomena: lexically conditioned allomorphy (e.g., the exponent of plural marking across English words like dogs, oxen, cherubim, and sheep) and homophony (e.g., the /-s/ suffix in English used both as a plural marker on nouns and as a tense-agreement marker on verbs).

3.2 Syntactic-semantic consideration

The final consideration that urges skepticism about the templatic POS hypothesis has to do with the syntactic distribution of non-comparative forms like Tawiil ‘tall’. If these forms really encoded POS, then they would denote functions of type \(e, t\) and be unable to combine with expressions of type \(\langle d, et\rangle, \ldots\), i.e., expressions whose function is to manipulate a degree argument. But in fact, non-comparative forms like Tawiil ‘tall’ are compatible with a range of expressions that are plausibly analyzed as denoting a function of type \(\langle d, et\rangle, \ldots\). These include the bolded expressions in the examples in (21)–(25), all taken from Egyptian Arabic.

(21) Ahmad Tawiil awi.
    Ahmad tall very
    ‘Ahmad is very tall.’

(22) Ahmad Tawiil giddan.
    Ahmad tall extremely
    ‘Ahmad is extremely tall.’
(23) Ahmad Tawiil (awi) li-daragit innu yilmis is-sa?if. Ahmad tall very to-degree that.he touches the-ceiling. ‘Ahmad is tall enough to touch the ceiling.’

(24) Il-madiina amaan xaaliS. the-city safe completely ‘The city is completely safe.’

(25) Is-sibbaak wisix ?uwayya. the-window dirty little ‘The window is a little dirty.’

In addition, it is also generally possible to express a comparison periphrastically using a non-comparative form followed by the word aktar ‘more’, especially for non-comparative forms that lack a corresponding comparative form such as ma?guul ‘busy’, as in (26). And some varieties of Egyptian Arabic even allow the non-comparative form of the adjective to participate in a “zero-marked” comparative structure in which the standard of comparison is introduced by the standard marker ?an, as in (27).¹⁰

(26) Ahmad ma?guul aktar min Basem. Ahmad busy more than Basem ‘Ahmad is busier than Basem.’

(27) Ahmad Tawiil ?an Basem. Ahmad tall than Basem ‘Ahmad is taller than Basem.’

But as was the case for the first two considerations, the data in (21)–(27) are similarly not fatal for the templatic POS hypothesis. The reason is that the precise distribution of the hypothesized POS morpheme varies from one theory to the next, and it is in fact conceivable that at least some of the examples in (21)–(27) involve positive semantics. Kennedy and McNally (2005b), for example, propose that degree expressions fall into three classes: true degree morphemes (type ⟨⟨d,et⟩⟩,et⟩) (these include measure phrases like two meters and proportional modifiers like completely), intensifiers (type ⟨et,et⟩) (such as very and extremely), and scale modifiers (type ⟨⟨d,et⟩,et⟩⟩) (these include comparatives and possibly related expressions like too and enough). (See also McNabb 2012 for an exploration of this approach in a cross-linguistic setting, taking into consideration Hebrew, Arabic, and Korean.) On this view, intensifiers combine with gradable adjectives that have already been converted via POS into type ⟨e,t⟩ expressions, rendering

¹⁰ According to our consultant, the zero-marked strategy for forming comparatives is not typical of Cairene Arabic but is found in the variety spoken in Alexandria. One might wonder whether (27) could be analyzed as an implicit comparison in the sense of Kennedy (2009). An implicit comparison is a sentence like (i) that can be analyzed as involving POS but also involving an overt phrase (compared to . . .) that helps fix the threshold for ‘standing out’ that POS introduces.

(i) Compared to Basem, Ahmad is tall.

But according to our consultant, (27), unlike (i), would be truthful even in a context where Ahmad and Basem differ in height by only a very small degree (the so-called ‘crisp judgment’ test for explicit comparison: see Kennedy 2009). This argues against an implicit comparison analysis of (27).
examples like (21) and (22) straightforwardly consistent with the templatic pos hypothesis. (23), (26), and (27) would involve a configuration in which a comparative or enough-morpheme combines with a \( (d, et) \) expression to yield another \( (d, et) \) expression which would then need to be converted via pos into a property of individuals. Squaring this with the templatic pos hypothesis would be a bit tricky since the morphosyntax would suggest that pos combines with the degree-relation-denoting root before the comparative or enough-morpheme enters the picture, but this would not be the first time that a theory would have to countenance a morphosyntax-semantics bracketing mismatch. This just leaves (24) and (25). Kennedy and McNally (2005b) do not discuss a little, but they do analyze completely as a true degree modifier, incompatible with pos. But more research would be needed to determine whether this is the right approach for Arabic xaaliS and \( \ddot{s}uwayya \), and until that research is done, no firm conclusion can be drawn.

It is also noteworthy that measure phrase constructions like (28) (which Kennedy and McNally 2005b analyze as involving true degree morphemes, incompatible with pos), as well as equative constructions like (29) (which Kennedy and McNally 2005b do not discuss), are in fact not translatable into Arabic using the non-comparative adjectival form \( Tawiil \) ‘tall’, as seen in (30)–(31). Instead, such meanings are typically expressed via a nominalized counterpart of the gradable adjective, as in (32)–(33).

(28) John is two meters tall.
(29) John is as tall as Bill.
(30) *Ahmad Tawiil mitreen.
   Ahmad tall   meter.DUAL
   Intended: ‘Ahmad is two meters tall.’ (adapted from McNabb 2012:94)
(31) Ahmad Tawiil zayy Basem.
   Ahmad tall   like Basem
   ‘Ahmad is tall like Basem.’ (i.e., both are tall)
   NOT: ‘Ahmad is as tall as Basem.’
(32) Ahmad Tuul-u mitreen.
   Ahmad height-his meter.DUAL
   ‘Ahmad is two meters tall.’
(33) Ahmad naifs Tuul Basem.
   Ahmad same height Basem
   ‘Ahmad is as tall as Basem.’

For an advocate of the templatic pos hypothesis, it would be very tempting to account for the facts in (30) and (31) by saying that the positive semantics built into Tawiil renders it incompatible with measure phrases and equative constructions. As it happens, though, the unacceptability of measure phrases with non-comparative gradable adjectives is actually quite common cross-linguistically (for discussion see Svenonius and Kennedy 2006; Sawada and Grano 2011; Grano and Kennedy 2012), so we cannot draw any special conclusion about Arabic on this basis alone. We are also reluctant to draw any particular conclusion from the equative data. Haspelmath et al.’s (To appear) extensive cross-linguistic survey of
equative constructions reveals a great deal of variation in how languages express such meanings. More research is needed here.\textsuperscript{11}

Given these inconclusive results, whether or not to adopt the templatic POS hypothesis depends on whether or not it should be considered the null hypothesis. We think that it should not be so considered, because of the overwhelming cross-linguistic evidence that POS is not overtly instantiated. So we tentatively reject the templatic POS hypothesis, but are open to reconsidering it if additional research tips the balance back in its favor. What does this (tentative) conclusion mean for theories that rely on a POS morpheme? We are left in the same position with which Grano (2012) concludes his study: either such theories are wrong and we need to pursue alternatives such as those associated with Kamp (1975); Klein (1980); Wellwood (2014), or POS is (for reasons not yet understood) universally realized as a syntactically invisible type-shift or silent morpheme.

4 Roots, words, and the grammar of property concepts

Above we proposed that the tri-consonantal roots of gradable adjectives denote degree relations (34) which can then be operated on by the templates in which the roots appear such as the comparative template (35).

\begin{align*}
(34) & \quad \text{[[}Twl\text{]]} = \lambda d \lambda x. \text{height}(x) \geq d \\
(35) & \quad \text{[[aCCaC]]} = \lambda g(\langle d, \langle e, t \rangle \rangle) \lambda x \lambda y. \exists d[g(d)(y) \land \neg g(d)(x)]
\end{align*}

As mentioned in note 9, this may be an oversimplification, since many of the relevant tri-consonantal roots are found in other words whose meanings would be difficult to derive from a type $\langle d, \langle e, t \rangle \rangle$ base. For example, the gradable adjective \textit{hakim} ‘wise’/\textit{ahkam} ‘wiser’ has a nominal counterpart \textit{hikma} ‘wisdom’. When used with possessive syntax, this nominal form can be used to ascribe wisdom to an individual or to compare two individuals with respect to their wisdom, as seen in (36)–(37) respectively.

(36) Ahmad \textasciitilde andu hikma.
Ahmad at.him wisdom
‘Ahmad has wisdom.’

(37) Ahmad \textasciitilde andu hikma aktar min Basem.
Ahmad at.him wisdom more than Basem
‘Ahmad has more wisdom than Basem.’

\textsuperscript{11} For the sake of completeness, we note that superlative meanings in Arabic are built on the comparative form, as in (i). From a cross-linguistic perspective, this is no surprise at all: see Bobaljik (2012).

(i) Ahmad aTwal Taalib fi-l-faSl.
Ahmad taller student in-the-class
‘Ahmad is the tallest student in the class.’

See Hallman (2016) for an in-depth investigation of the syntax and semantics of superlatives in Syrian Arabic.
This pattern fits a robust cross-linguistic trend recently studied by Francez and Koontz-Garboden (2015): adjectival property concepts are ascribed to an individual via ordinary predication, whereas (many) nominal property concepts are ascribed to an individual via possessive morphosyntax (where ‘property concepts’, following Dixon 1982; Francez and Koontz-Garboden 2015, are concepts typically lexicalized as adjectives). To account for this generalization, Francez and Koontz-Garboden propose that possessive-inducing nominal property concepts crucially differ from their adjectival counterparts in that they are substance-denoting (more precisely, functions from portions of substances to truth values). Predicating a substance-denoting expression of an individual (e.g., “John is wisdom”) returns a bizarre meaning along the lines of “John is a portion of wisdom”; correspondingly, the function of possessive syntax in “John has wisdom” is to mediate the relationship between the individual and the substance so as to arrive at a sensible meaning along the lines of “There is some (sufficiently large) portion of wisdom x and John stands in the possession relation with x.”

Applied to the Arabic data, Francez and Koontz-Garboden’s proposal would lead us to the conclusion that èakiim ‘wise’ denotes a degree relation (adopting the tentative conclusion from the previous section that this form does not have POS semantics built into it), as in (38); ahkam ‘wiser’ has comparative semantics built into it, as in (39); and hikma ‘wisdom’ is a function that inputs a portion of a substance and returns true iff that portion is a member of the set of all portions of wisdom, as in (40).

(38) \( [èakiim] = \lambda d \lambda x. \text{wisdom}(x) \geq d \)  
(i.e., èakiim denotes a relation between degrees d and individuals x that holds iff x’s degree of wisdom meets or exceeds d)

(39) \( [ahkam] = \lambda x \lambda y. \exists d [\text{wisdom}(y) \geq d \land \neg \text{wisdom}(x) \geq d] \)  
(i.e., ahkam denotes a relation between individuals x and individuals y that holds iff there is some degree d such that y’s degree of wisdom meets or exceeds d whereas x’s does not.)

(40) \( [hikma] = \lambda p. p \in \text{wisdom} \)  
(i.e., hikma denotes a property that is true of a portion p iff p is a member of the set of all portions of wisdom.)

But now we have a rather curious state of affairs: meta-language ‘wisdom’ in (38)–(39) denotes a measure function (a function from individuals to degrees of wisdom), whereas meta-language ‘wisdom’ in (40) denotes the set of all portions of the abstract substance wisdom. This raises a challenge: is it possible — and is it desirable — to assign a denotation to the root √hkm from which the denotations of the words in (38)–(40) can be derived using familiar compositional principles? In this light, we close this short paper with an exploratory decompositional semantics for Arabic gradable property concepts.

As it happens, Menon and Pancheva’s (2014) analysis of property concept roots in Malayalam provides a potential solution.\(^{\text{12}}\) Suppose following what these authors say for Malayalam that property concept roots denote individuals in the property-theoretic sense of Chierchia and Turner (1988), as in (41).

\(^{\text{12}}\) See also Baglini (2015) for another approach to the semantic relationship between adjectival and nominal property concepts. Unfortunately, we lack the space here to compare Baglini’s approach with Menon and Pancheva’s.
(41) $[\sqrt{\text{hikm}}]$ = the property of wisdom

When this root appears in the noun form hikma, the nominalizing function in (42) applies to it so that it will end up having the appropriate denotation (where ‘$\leq$’ is the part-of relation in the sense of Chierchia 1998). Possibly, this function could be identified with the word shape used for the nominal form, such as CiCCa in the case of hikma.

(42) $[[n]] = \lambda \Pi \lambda x. x \in \{y|y \leq \Pi\}$
(i.e., $n$ denotes a relation between property-theoretic individuals $\Pi$ and individuals $x$ that holds iff $x$ is a member of the set of all portions of $\Pi$.)
(loosely based on Menon and Pancheva 2014:298, ex. 30)

When the root appears in the adjective form hakiim, by contrast, it is run through a function that yields a degree relation, as in (43), where $\mu$ is a function from portions of substances to degrees. Possibly, this function could be identified with the word shape used in the adjectival form, such as CaCiiC in the case of hakiim ‘wise’. On this view, the adjectival word shape does not encode positive semantics, but it still has a semantic role to play, taking individual properties and returning degree relations.

(43) $[[a]] = \lambda \Pi \lambda d \lambda x. \exists y[y \in \{z|z \leq \Pi\} \text{ and } x \text{ has } y \text{ and } \mu(y) \geq d]$  
(i.e., $a$ denotes a relation between property-theoretic individuals $\Pi$, degrees $d$, and individuals $x$, that holds iff there is some $y$ such that $y$ is a member of the set of all portions of $\Pi$ and $x$ has $y$ and $y$’s amount meets or exceeds $d$.)
(slightly revised from Menon and Pancheva 2014:297, ex. 25)

Finally, as for the comparative form, two options are available: either the root is surreptitiously run through the function in (43) before combining with the template comparative morpheme in (35), or both of these steps are achieved in one pass, via a comparative morpheme appropriately rewritten so as to accept an individual property rather than a degree relation as its first argument, as in (44). (See Francez and Koontz-Garboden 2015 for the assumptions about comparative property possession built into this denotation.)

(44) $[[aCCaC]] = \lambda \Pi \lambda x \lambda y. \{z|z \leq \Pi\} \subset \{z'|z' \leq \Pi\}$
(i.e., $aCCaC$ denotes a relation between property-theoretic individuals $\Pi$, individuals $x$, and individuals $y$, that holds iff the set of all portions of $\Pi$ that $x$ has is a proper subset of the set of all portions of $\Pi$ that $y$ has.)

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13 We depart from Menon and Pancheva (2014) here in essentially two ways. First, their proposed nominalizing function introduces a degree argument whereas ours does not. Our decision not to include a degree argument stems from our working hypothesis that Francez and Koontz-Garboden (2015) are correct in not positing a degree argument for substance-denoting property concepts. Second, we employ set-theoretic and mereological notions in describing the relationship between $x$ and $\Pi$ whereas Menon and Pancheva’s denotation describes the relation informally as ‘$x$ is an instance of $\Pi$’. We do this in order to suggest that their ‘is an instance of’ relation is reducible to familiar concepts in set theory and mereology.

14 We depart here from Menon and Pancheva in replacing their ‘is an instance of’ relation with set-theoretic and mereological notions. See note 13.
Francez and Koontz-Garboden (To appear) level a number of criticisms against Menon and Pancheva’s (2014) proposal to decompose Malayalam property concept words into roots and semantically contentful categorizing morphemes, and some but not all of these criticisms would carry over straightforwardly to the treatment of Arabic that we entertain here. Among Francez and Koontz-Garboden’s criticisms is the observation that on Menon and Pancheva’s approach, the adjectival categorizer encodes possessive semantics whereas the nominal categorizer does not, a difference which has no obvious explanation and yet which would have to hold in a cross-linguistically robust way given the observed correlation between nominal property concepts and (overt, external) possessive morphosyntax. Although we are inclined to share this concern, we also find the de-compositional project an attractive one for the way it renders transparent the semantic relationship between obviously related forms like èaakim, akma, and èikma; and Menon and Pancheva’s approach strikes us as a promising step in this direction. But we lack the space here to fully evaluate the criticisms that Francez and Koontz-Garboden raise. So we will end on this inconclusive note, hoping to have made the case that Arabic offers an excellent testing ground for theories of the morpho-semantics of gradable adjectives and of property concepts more generally.

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