Equative Degree Quantification in Damascene Arabic[1]

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Abstract In this paper, I document a degree-equative construction in contemporary Syrian Arabic. This construction is headed by the noun *ʔadd* meaning 'size' or 'extent', but I demonstrate extensive parallels in distribution between *ʔadd* and the comparative phrase *aktar min* 'more than'. These parallels suggest that like the comparative, *ʔadd* functions as a degree quantifier, an operator that binds a degree variable in its scope. But it stands in the same asymmetric entailment relation to *aktar min* than English *as much as* does to *more*, indicating that *ʔadd* is an equative counterpart of *aktar min* parallel to English *as much as*.

Keywords: equative, comparative, degree, semantics

1. Introduction

In this paper, I claim that the word *ʔadd* in Syrian Arabic may function as an 'equative' degree quantifier with the same meaning as English *as much as*. I claim that *ʔadd* combines with a nominal complement, a degree relation, and a nominal subject of comparison, and asserts that the subject bears the degree relation to as great a degree as the nominal

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complement. On this analysis, *ʔadd* has the same argument structure as the comparative degree quantifier *aktar min* 'more than'. I demonstrate pervasive similarities in distribution between *ʔadd* and *aktar min* that support the treatment of *ʔadd* as a degree quantifier, and present an analysis of *ʔadd* that makes it an equative counterpart to the comparative. It stands in the same relation to *aktar min* that English *as much as* stands in to *more than*.

The facts presented here have been collected by elicitation from five native speakers of Syrian Arabic from the city of Damascus. My use of the term 'Syrian Arabic' here and below may be reckless. Though I suspect that the conclusions drawn here are valid for other varieties of Syrian, the facts on which these conclusions are based are provided by Damascene speakers, and could turn out to be different in other regions. *ʔadd*, or cognates *qadd*, *qadar* or *gadar*, are found in other dialects of Arabic as well but I defer the question of whether they have the same usage there; a cross-dialectal survey is warranted but not undertaken here. Test sentences were presented to consultants in Arabic, who judged their grammaticality, as well as entailment and synonymy relations between sentences, where relevant. The native speakers consulted for this work have agreed in writing to the publication of the data they provide. I begin by describing the distribution and semantic contribution of the comparative phrase *aktar min* 'more than' in Syrian Arabic and then in sections 3 and 4 show that *ʔadd* has exactly this same distribution. I treat the meaning of *ʔadd* in section 5.

2. *Aktar min* 'more than'

Comparative adjectives are formed in Syrian Arabic by putting the root consonants of the adjective in the prosodic template $aC_1C_2aC_3$. In this manner, *aftˁar* 'smarter' is derived from *faːtˁir* 'smart', *aħla* (underlyingly *aħlaw*) 'more beautiful' from *ħilu* (underlyingly *ħilw*)

'beautiful', *akbar* 'bigger' from *kbiːr*, etc. Comparative adjectives may introduce a 'standard phrase' headed by the preposition *min* 'from', illustrated in (1).

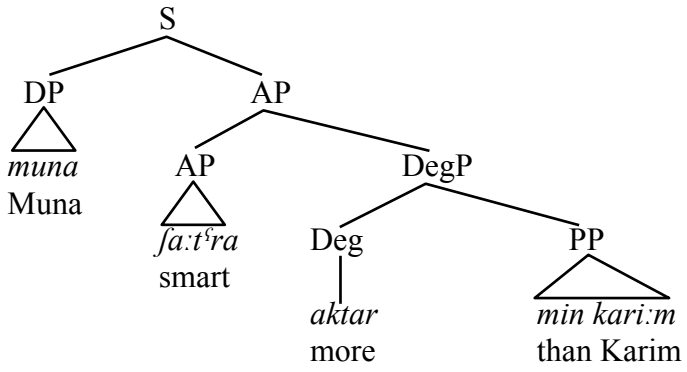
(1) *muna aftˁar min kariːm*
Mona smarter than Karim
'Mona is smarter than Karim.'

The comparative morpheme and the underlying adjective can be optionally morphosyntactically separated in Arabic, in which case the comparative morpheme (a prosodic template) is hosted by default by what I assume is a pleonastic stem *ktiːr* 'much, many', as illustrated in (2). In this case, the adjective occurs in its usual post-nominal position, followed in turn by *aktar* and its *min*-phrase, if overt.

(2) *muna ʃaːtˁra aktar min kariːm.*
Mona smart more than Karim
'Mona is smarter than Karim.'

Following von Stechow (1984), Heim (1985) and many others, I attribute the syntactic category Deg[ree] to the comparative morpheme. This morpheme combines first with the 'standard' of comparison in a prepositional phrase headed by *min* 'from'. The DegP so derived combines in turn with a degree relation, i.e., a relation between an individual and a degree. This combination builds a property of individuals—the property an individual has if he, she or it bears the degree relation to a greater degree than the standard of comparison does. The sentence in (2) directly reflects the semantic constituency just described, shown in (3), in which *aktar min kariːm* combines with the predicate adjective *ʃaːtˁra*, deriving a complex predicate adjective whose subject is Muna. The subject of comparison is not always the syntactic subject, as other examples below show. What I call the 'subject of comparison' is sometimes referred to as the 'associate' of the comparative (Bhatt and Takahashi 2011). The tree in (3) illustrates the basic constituency of (2), whose full syntactic structure is likely more complex (I ignore tense, for example).

(3)



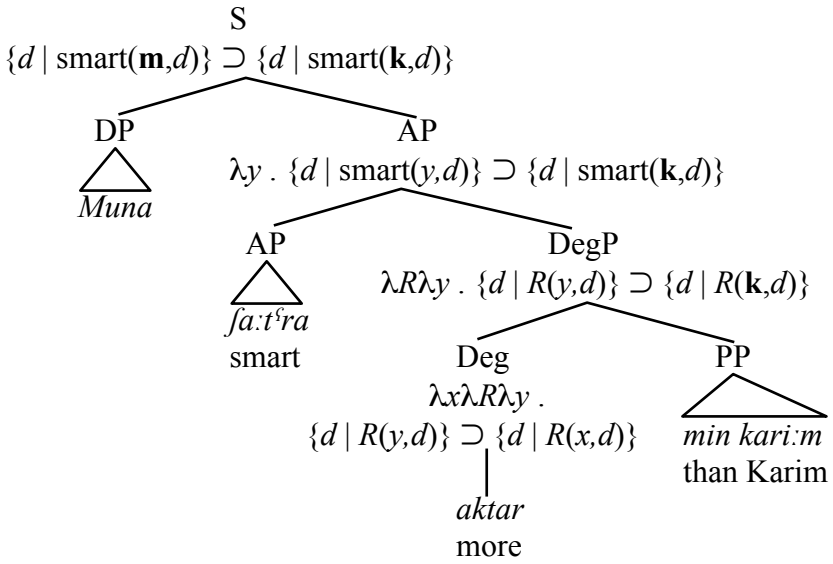
If the comparative relation between Muna, Karim and the degree relation *ʃa:tˁra* in (3) is contributed by *aktar* (consisting of *aCCaC* with vacuous *kti:r*), then the preposition *min* 'from' would appear to be semantically vacuous in this construction. I assume for now that this is the case and return to this issue in section 3. The precise formulation of the relation that *aktar* puts its three arguments in (the standard *kari:m*, the degree relation *ʃa:tˁra* and the subject of comparison *muna*) is not critical for the comparison with *ʔadd*. For concreteness' sake I adopt the definition in (4) for *aktar*, adapted from Heim (2006) (see also Hoeksema 1983, Heim 1985, among others). The superlative morpheme (which again is actually just the prosodic template *aCCaC*) relates an individual *x*, a degree relation *R* and another individual *y*, and says that the set of degrees to which *y* bears *R* is a proper superset of the degrees to which *x* bears *R*. The Greek letter λ followed by a variable with a subscript indicates that the term being defined (here *aCCaC*) has an argument of the logical type the subscript designates, and combines with its arguments in the order the λ-prefixes occur in. When a term combines with an argument, the argument replaces the variable indexed by the corresponding λ-prefix in the assertion that follows the period separating the specification of the term's argument structure from the assertion it makes about those arguments. Standardly, the subscript *e* designates the type of entities, *d* of degrees, and *t* of the valuation 'true' or 'false'. For any types α and β, $<\alpha,\beta>$ is the type of a relation between a term of type α and type β, so that the comparative in (4) has the type $<e, <<d,<e,t>>,<e,t>>>$, where the final *t* represents the valuation ('true or false') of the assertion that follows the period in (4) for the arguments

specified by the lambda-prefixes preceding the period. The curly brackets define sets by abstraction. The notation $\{d \mid R(y,d)\}$ represents the set of degrees that *y* bears the *R* relation to.

(4) Definition of the comparative:
$[\![\text{aCCaC}]\!] = \lambda x_e \lambda R_{<d,<e,t>>} \lambda y_e \, . \, \{d \mid R(y,d)\} \supset \{d \mid R(x,d)\}$

This definition is based on the premise that degree scales are downward entailing. If an individual bears the degree relation *smart* to a certain degree, then they bear the relation to all lesser degrees (Heim 1985). The tree in (3) then composes semantically as in (5). The top node of this tree is a formula that holds if the set of degrees to which Muna is smart properly contains the set of degrees to which Karim is smart. I.e., Muna has more degrees of smartness than Karim. If we were to measure smartness in degrees of IQ, and Muna has an IQ of 110 and Karim of 100, then the set $\{d \mid \text{smart}(\mathbf{mary},d)\}$ is the set {110, 109, 108, ... } and the set $\{d \mid \text{smart}(\mathbf{karim},d)\}$ is the set {100, 99, 98, ...}. Since the first is indeed a superset of the second, the assertion that the structure in (5) makes is true in this context. In (5), '**m**' abbreviates '**muna**' and '**k**' '**karim**' (the denotations of the names *Muna* and *Karim* respectively).

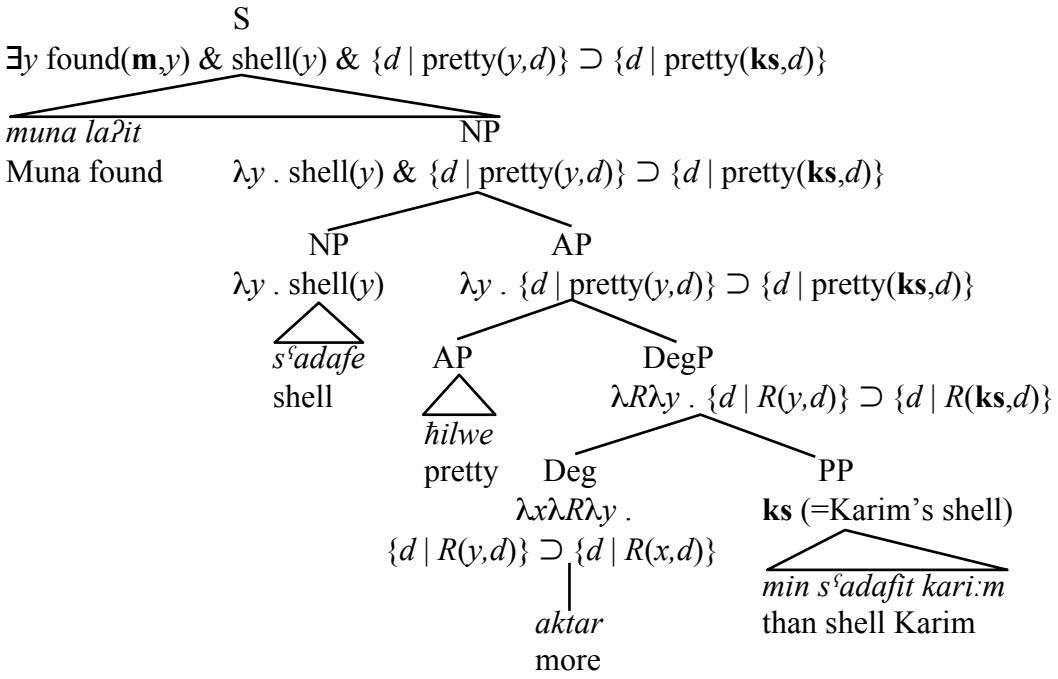
(5)



In (3)/(5), the comparative phrase *aktar min kariːm* modifies a predicate adjective. It may also modify an attributive adjective, as (6) illustrates, which composes semantically as illustrated in (7). I assume the indefinite object NP denotes a predicate which is integrated into the verb phrase by the 'Restrict' operation and bound by existential closure, which inserts the existential quantifier seen in (7); see Chung and Ladusaw (2004) for details.

(6) *muna laʔi-t sˁadafe ħilwe aktar min sˁadafit kariːm.*
Mona found-3FS shell pretty more than shell Karim
'Mona found a prettier shell than Karim's shell.'

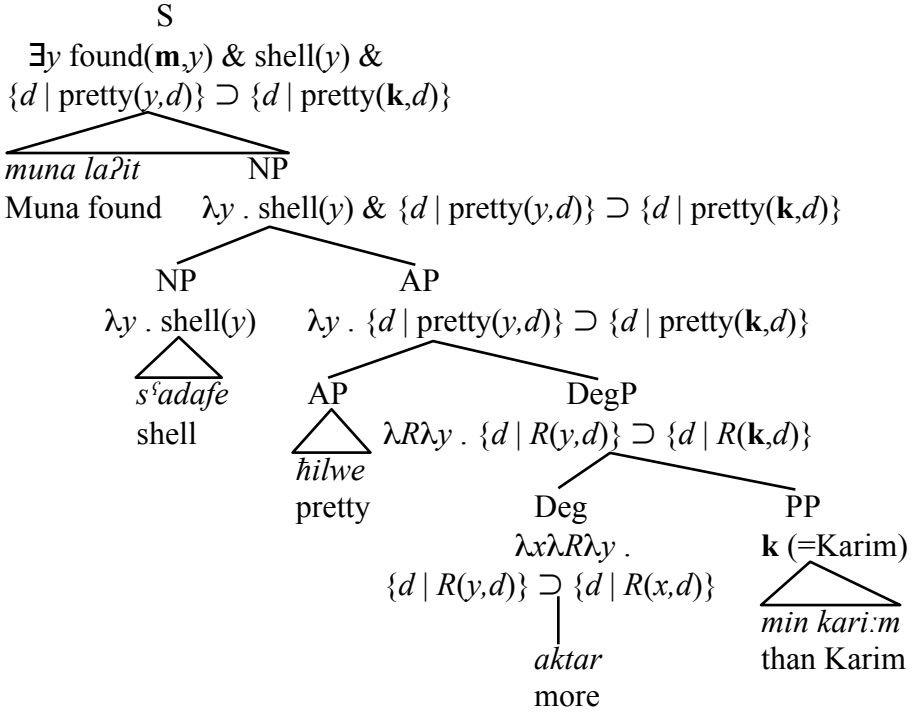
(7)



When *aktar min* modifies an attributive adjective, it cannot have scope outside the DP it occurs in (Al-Bitar 2019). For that reason, (8) only has a pragmatically infelicitous reading parallel to (6)/(7), where we compare Karim with the shell Muna found in terms of prettiness.

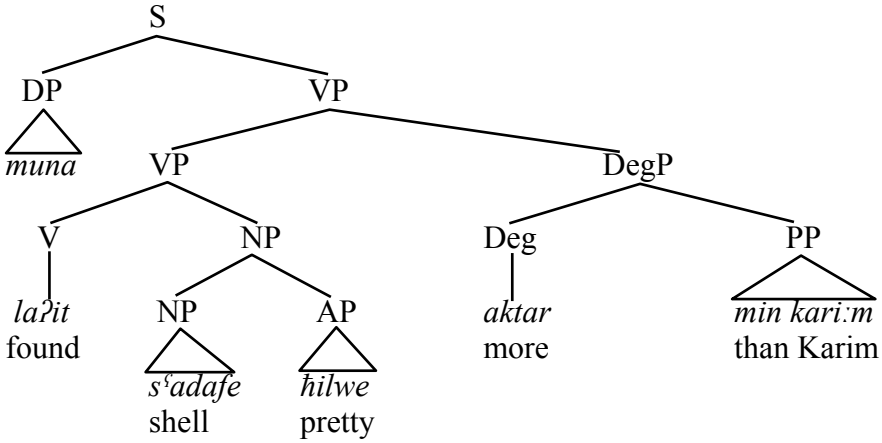
(8) *muna laʔi-t sˁadafe ħilwe aktar min kariːm*
Mona found-3FS shell pretty more than Karim
'Mona found a prettier shell than Karim [is].' (!)

(9)



If we wanted to compare Karim instead to other individuals who found shells, we would have to adjoin the phrase *aktar min kari:m* to VP, as illustrated in (10), and let VP function as a degree relation over how pretty the shells were that Muna and Karim found. The fact that no 'sensible' reading is available to (8) means we cannot attribute to (8) the structure in (10), where DegP adjoins to VP. The structure in (10) is ungrammatical for reasons I describe below. The sentence in (8) is not ungrammatical, but can only be attributed the structure in (9), which is pragmatically infelicitous because it compares Karim with the shell Muna found in terms of prettiness, as the semantic composition there dictates.

(10) (Ungrammatical)



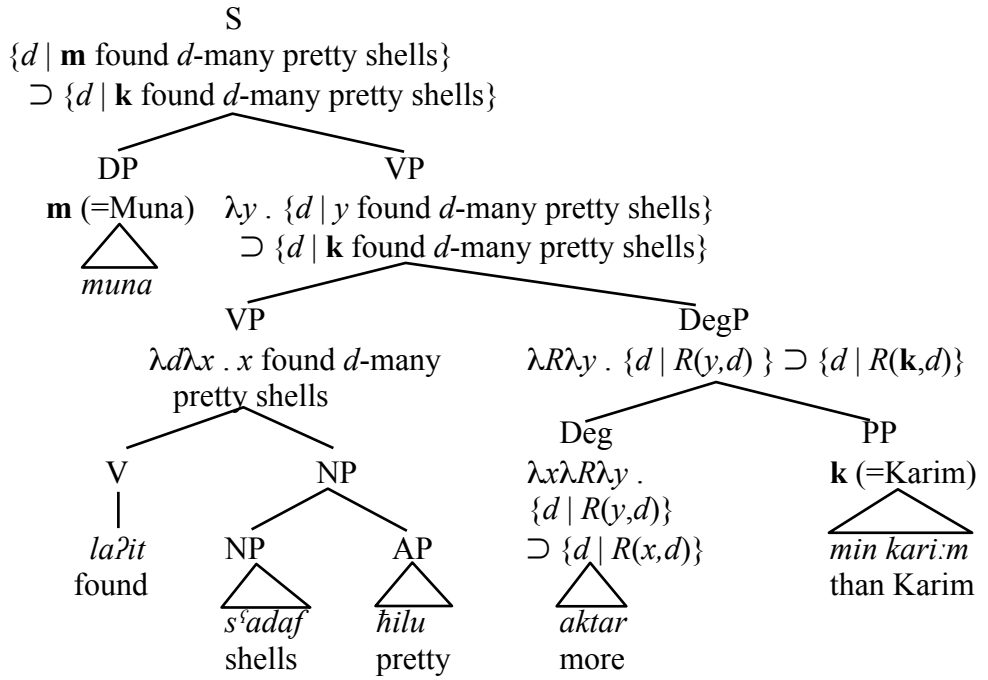
The configuration that is ungrammatical in (8), where DegP occurs as an adjunct of VP, is grammatical in (11). We can tell that DegP is adjoined to VP in (11) because the degree relation that *aktar* relates Muna and Karim to is the VP *laʔit sˁadaf ħilu* 'found pretty shells'. This means that VP functions as the degree relation argument of DegP, meaning DegP combines with VP in the syntax, as illustrated in (12). (11) asserts that Muna found more shells than Karim found, where the degree argument of the degree relation that VP denotes measures out a quantity of shells. That is, the VP denotes the degree relation '$\lambda d \lambda x$. *x* found *d*-many pretty shells' (as illustrated in (12)). The reading that is not available in the ungrammatical (10) is not available in (12) either, namely the reading in which the adjective *ħilu* 'pretty' contributes the degree scale. It is impossible to interpret (11) to mean that Muna found prettier shells than Karim did.

(11)

muna	*laʔi-t*	*sˁadaf*	*ħilu*	*aktar*	*min*	*kariːm*
Mona	found-3FS	shells	pretty	more	than	Karim

'Mona found more pretty shells than Karim (found).'

(12)



In (8)/(10) it is impossible to construe DegP as a VP modifier, but in (11)/(12) it is possible. The difference can be reduced to what is possible to construe as a scalar associate for the comparative relation. In both cases, it is impossible for an adjective embedded within the object NP to contribute a scale to the degree relation the VP denotes. In (12), the quantity argument of the plural NP *sʕadaf ħilu* 'pretty shells' may contribute a degree scale, since we interpret (12) by measuring out how many shells each of Muna and Karim found. But the nominal object in (10) is singular, and so does not have a quantity argument, and the other scalar term in (10)—the adjective *ħilwe* 'pretty'—is not accessible as an associate for DegP because it is embedded within an NP.

It appears that an adjective may in principle function as the scalar associate of a comparative DegP, as it does in (5) and (7), but not when the adjective is separated from DegP by an NP boundary (see Hallman 2016, 2018 on this same restriction in superlative and quantity interrogative constructions, respectively). This is the case when VP functions as the degree relation argument of DegP (so that DegP must be adjoined to VP), but the scalar term we are abstracting a degree relation over at the VP level is embedded within an NP within that VP, as is the case in the ungrammatical tree in (10). These observations suggest that NP is inaccessible to the process that derives a degree relation over VP. The fact that a plural NP itself is accessible, as in (11)/(12), stands to reason, since number features of the head noun (as well as person and gender) project to the NP level for the purposes of agreement and pronominalization. The process that derives a degree relation over the VP in (12), then, need not reach into the NP to find a scalar term; the NP is itself scalar. I conclude that DegP may in principle adjoin to VP, as long as VP can be construed as a degree relation, which requires the term contributing its degree argument to be syntactically accessible, which it is not in (10) because an NP node intervenes between the VP node where degree abstraction takes place and the AP node whose degree argument is abstracted over.

In summary, comparative DegP in Syrian Arabic may combine with an AP or with a VP, provided this VP can be construed as a degree relation. Construing VP as a degree relation involves abstracting over the degree argument of some scalar term within the VP (we will see examples of other potential targets for abstraction later), which in turn is restricted by the barrierhood of NP. This concludes the initial summary of the behavior of the comparative, to which I compare *ʔadd* in the following section, discussing additional facets of the behavior of both when they become relevant.

3. *ʔadd* 'as much as': basic parallels to *aktar*

The term *ʔadd* is a noun that appears to have a basic use corresponding to English 'size' but also a use meaning 'extent' more abstractly, and, I claim, in this sense it may be used as a degree quantifier, specifically an equative counterpart to comparative *aktar*. It may be used to refer to a degree, particularly in conjunction with a demonstrative determiner. In (13) the speaker uses *ha-l-ʔadd* 'this size' to refer deictically to the size in question, for example by holding their hands apart to the length of the fish.

(13) *sˁid-ᵊt* *samake* *ha-l-ʔadd!*
caught-1S fish this-the-size
'I caught a fish this big!'

But *ʔadd* can also be used in construct with a noun to build what I claim is a degree quantifier, illustrated in (14). I gloss this use of *ʔadd* as EQ for 'equative' foreshadowing the semantic analysis I will give to *ʔadd* in section 5.

(14) *muna* *tˁawiːle* *ʔadd* *kariːm.*
Mona tall EQ Karim
'Mona is as tall as Karim.'

While (14) might still be construed as expressing some literal notion of size, *ʔadd* may be used in environments where the scale is more abstract, such as (15). One cannot measure out Muna's intelligence on a spatial dimension.

(15) *muna ʃaːtˁra ʔadd kariːm.*
Mona smart EQ Karim
'Mona is as smart as Karim.'

In examples like (15), *ʔadd* is comparing Muna and Karim in terms of the degree relation *ʃaːtˁra* 'smart', just like *aktar* 'more' does in (2). The relation that *ʔadd* denotes is different from the one *aktar* denotes, a denotation I call 'equative' (following Hellan 1981, von Stechow 1984, Heim 1985 and others) and flesh out in more detail in section 5. In what follows, I aim to show that *ʔadd* patterns syntactically just like *aktar min*, reinforcing the claim that *ʔadd* and *aktar* are both semantically degree quantifiers, and syntactically DegPs. Before proceeding, I address an obvious difference in internal structure between *ʔadd* and *aktar*, namely the fact that *ʔadd* combines with a standard of comparison directly (as in *ʔadd kariːm* 'as-much-as Karim'), while *aktar* requires a mediating preposition *min* 'from' (as in *aktar min kariːm* literally 'more from Karim'). This difference is presumably related to the fact that *ʔadd* is morphologically nominal, being etymologically related to the noun *ʔadd* meaning 'size', while *aktar* is adjectival, being derived from the adjective *ktiːr* 'much/many'. As a noun, *ʔadd* may occur in construct with another noun, and this syntactic configuration constructionally specifies the role of the following noun as standard-of-comparison. The construct state is a kind of nominal compounding construction typical of Semitic languages; see Benmamoun (2006) on Arabic and Cowell (1964, ch. 18) on Syrian in particular. As an adjective, comparative *aktar* cannot occur in construct with a following noun, so some other syntactic mechanism must be put to use to syntactically license the nominal complement. Prepositions commonly play this role; see Chomsky (1970) for a theory of syntactic government that attempts to explain this discrepancy between nouns and adjectives.

However, this difference in internal structure between *ʔadd* and *aktar* does not appear to impact the external distribution of the two terms. I endeavor below to show that *ʔadd*+DP has the exact same distribution as *aktar min*+DP. To the extent *ʔadd* is internally nominal and *aktar* internally adjectival, externally they fall in the same distributional class. The discussion below shows that *ʔadd* functions as a degree quantifier like *aktar*, so I label both 'DegP'.

The distributional similarities begin with the fact that *ʔadd* may adjoin to both a predicate adjective, as shown in (15), as well as an attributive adjective, as shown in (16) (cf. (6)).

(16) *muna laʔi-t sˁadafe ħilwe ʔadd sˁadafit kariːm.*
Mona found-3FS shell pretty EQ shell Karim
'Mona found as pretty a shell as Karim's shell.'

Further, when *ʔadd* modifies an attributive adjective, as in (17), the DegP *ʔadd kariːm* cannot have scope outside the DP containing the attributive adjective. This is evident in the fact that (17) cannot be construed to compare Muna and Karim in terms of how pretty a shell they *found*.

(17) *muna laʔi-t sˁadafe ħilwe ʔadd kariːm*
Mona found-3FS shell pretty EQ Karim
'Mona found as pretty a shell as Karim [is].'

This is the same fact we observed for the comparative in (8). Like (8), (17) can only be construed to mean that the shell that Muna found is as pretty as Karim *is*, and it is strange to compare a person with a seashell in terms of prettiness. (17) is not strictly ungrammatical, but does not make a sensible comparison. The 'unsensible' comparison it makes is derived from a structure in which the DegP *ʔadd kariːm* 'as much as Karim' is adjoined to the adjective *ħilwe* 'pretty', parallel to the comparative structure in (9). As the comparative example (11) with the structure in (12) shows, DegP may in principle adjoin to VP, taking the VP as a degree relation argument. But that degree relation is subject to constraints on its derivation, including

the fact that a degree relation cannot be abstracted across an NP boundary. If *ʔadd kariːm* is a degree quantifier that takes a degree relation argument like *aktar min kariːm* 'more than Karim', then we expect the distribution of *ʔadd kariːm* to be subject to this same constraint, and indeed (17) does not admit a sensible interpretation according to which Muna found as pretty a shell as Karim found. The only potential scalar associate for *ʔadd* there is the adjective *ħilwe*, but that adjective is embedded in an object NP, across which degree abstraction cannot extend. So here as in the comparative example in (8)/(9), the only structure that can be assigned to the string in (17) is one where the phrase *ʔadd kariːm* is directly adjoined to the adjective *ħilwe*, so that no NP boundary intervenes between *ʔadd kariːm* and *ħilwe*. But this configuration asserts that Muna's shell is as pretty as Karim *is*. While technically grammatical on that reading, that reading of (17) is not pragmatically felicitous. Equative *ʔadd* is parallel to comparative *aktar min* in this regard.

In light of these observations, we expect that a reading in which *ʔadd* takes the entire VP as a degree relation argument should be available as long as the degree relation itself is well formed, for example when a plural object functions as the scalar associate, as in (18) (cf. (11)), rather than an adjective *within* an object NP, as in (17). A plural object is accessible for degree abstraction at the level of VP because the chain so formed does not cross over an NP boundary. Rather, the chain extends to the NP boundary, where the plural feature is represented.

(18) *muna laʔi-t sˁadaf ħilu ʔadd kariːm*
Mona found-3FS shell pretty EQ Karim
'Mona found as many pretty shells as Karim (did).'

This expectation is borne out in (18), which asserts that Muna and Karim are the same in terms of how many shells they found. Here, the phrase *ʔadd kariːm* is adjoined to VP, and VP functions as a degree relation in terms of which Muna and Karim are compared, parallel to the comparative structure in (12). As in (17), no reading is available for (18) in which we

compare Mona and Karim in terms of how pretty the shells were that they found, but rather only in terms of how many shells they found. The restriction that a degree abstraction chain may not cross over an NP boundary restricts both *aktar min* 'more than' and *ʔadd* 'as many as'.

In summary, both *aktar min* and *ʔadd* combine with an individual denoting a 'standard', a degree relation, and another individual denoting the subject of comparison. In both cases, the degree relation is determined by the syntactic locus of *ʔadd*/*aktar min* in the surface structure as adjunct of VP or (attributive or predicative) AP. In the contexts surveyed above, *ʔadd* and *aktar min* have the same distribution and so belong the same syntactic class, that which I term 'DegP'.

4. Additional parallels between *ʔadd* and *aktar*

Examples (11) and (18) show *aktar* and *ʔadd* as VP adjuncts. In both cases, the scalar associate within the VP (the term that contributes the degree argument to the degree relation VP denotes), is a plural noun. The degree in question measures out the plurality. But the source of scalarity is not restricted to plural nouns. Both *aktar* and *ʔadd* may combine with any VP that denotes a degree relation, regardless of the source of scalarity. In (19), the scalar associate of the degree quantifier is the gradable verb *bᵊ-t-xaːf* '(she) fears', in (20) the scalar adverb *b-sirʕa* 'with speed', i.e., 'fast', and in (21) the pluractional dimension of the verb *dars-it* '(she) studied', which refers to how long or how intensely she studied.

(19) a. *saːra* *bᵊ-t-xaːf* *min* *lᵊ-klaːb* *aktar min* *nuha*
Sarah IND-3FS-fear of the-dogs more than Nuha
'Sarah fears dogs more than Nuha.'

b. *saːra* *bᵊ-t-xaːf* *min* *lᵊ-klaːb* *ʔadd* *nuha*
Sarah IND-3FS-fear of the-dogs EQ Nuha
'Sarah fears dogs as much as Nuha.'

(20) a. *saːra* *saːʔ-it* *b-sirʕa* *aktar min* *nuha*
Sarah drove-3FS with-speed more than Nuha
'Sarah drove faster than Nuha.'

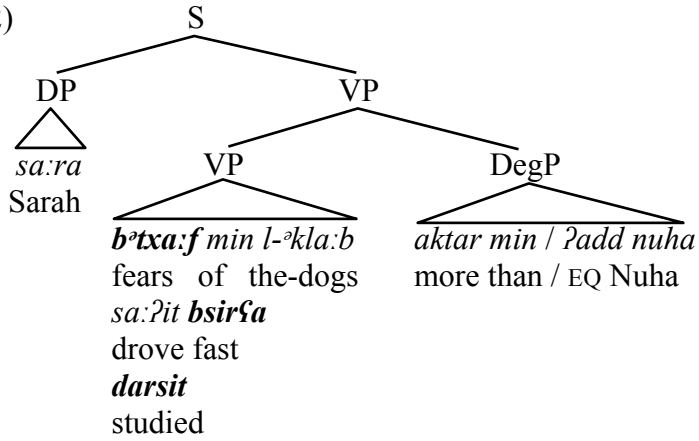
b. *saːra* *saːʔ-it* *b-sirʕa* *ʔadd* *nuha*
Sarah drove-3FS with-speed EQ Nuha
'Sarah drove as fast as Nuha.'

(21) a. *saːra* *dars-it* *aktar min* *nuha*
Sarah studied-3FS more than Nuha
'Sarah studied more than Nuha.' (longer or more intensively)

b. *saːra* *dars-it* *ʔadd* *nuha*
Sarah studied-3FS EQ Nuha
'Sarah studied as much as Nuha.' (as long or intensively as)

In each of these cases, *aktar* and *ʔadd* adjoin, together with their internal argument (the standard of comparison), to VP, which functions as a degree relation whose degree argument is contributed by a scalar term shown in bold in (22).

(22)



Just as both *aktar* and *ʔadd* may adjoin to both AP and VP, both display semantic ambiguities with modal verbs that suggest that their attachment site at VP may include or exclude the modal verb. Again, equative *ʔadd* parallels comparative *aktar* in this respect. Suppose Sarah and Nabil are collecting signatures for a petition and both have a quota of 100 signatures they have to meet. Sarah has only collected 30 signatures so far but Nabil has collected 40, so Sarah still needs to collect 70 but Nabil only 60. In this case we can say (23),

intending to mean that the number of signatures that Sarah still needs to collect exceeds the number that Nabil still needs to collect (the (i)-reading below). On a somewhat less salient reading, we can utter (23) intending to assert that what Sarah needs to do is to collect more signatures than Nabil, regardless of how many Nabil collects (the (ii)-reading below), perhaps because the person who collects the most signatures gets a prize, or for whatever reason Sarah wants to 'beat' Nabil at signature collecting.

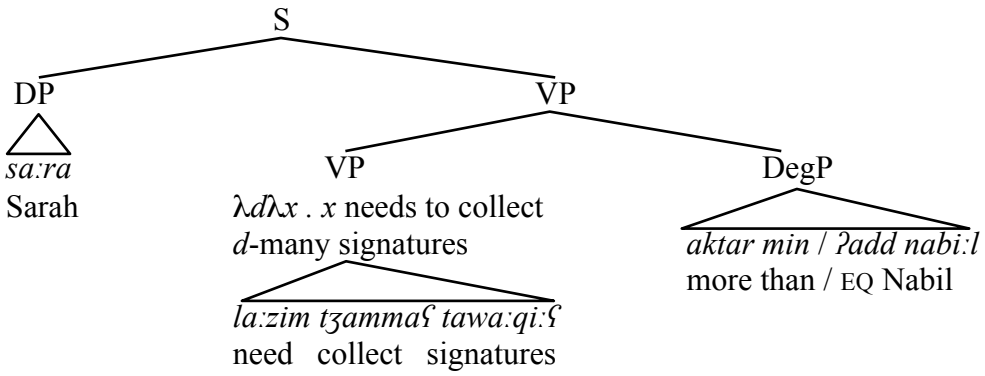
(23) *saːra* *laːzim* *t-ʒammiʕ* *tawaːqiːʕ* *aktar min* *nabiːl*
Sarah need 3FS-collect signatures more than Nabil
(i) 'Sarah needs to collect more signatures than Nabil needs to collect.'
(ii) 'Sarah needs to collect more signatures than Nabil collects.'

Equative *ʔadd* displays this same ambiguity, illustrated in (24). This sentence can be construed to mean either that the number of signatures Sarah needs to collect is the same as the number that Nabil needs to collect (the (i)-reading), or that what she needs to do is to collect the same number of signatures as he does, however many that is (the (ii)-reading).

(24) *saːra* *laːzim* *t-ʒammiʕ* *tawaːqiːʕ* *ʔadd* *nabiːl*
Sarah need 3FS-collect signatures EQ Nabil
(i) 'Sarah needs to collect as many signatures as Nabil needs to collect.'
(ii) 'Sarah needs to collect as many signatures as Nabil collects.'

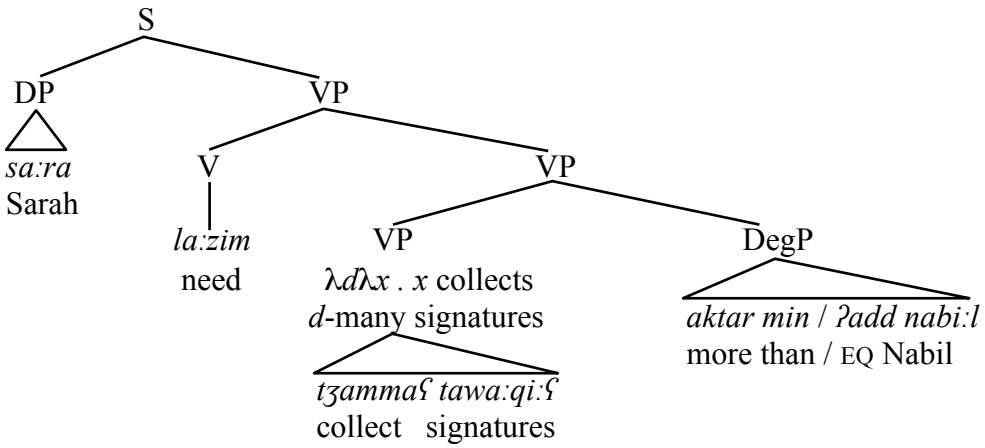
For the comparative, this ambiguity has been characterized as a structural scope ambiguity between the comparative DegP and the modal verb (Rullmann 1995, Heim 2001). The (i) reading above corresponds to the tree in (25), where DegP scopes above the modal verb. In this case, the modal verb is part of the degree relation we compare Sarah and Nabil with respect to, so we are comparing them in terms of their needs. The judgments in (24) indicate that *ʔadd* can be construed in this same configuration.

(25)



In the (ii) reading of (23) and (24), the degree quantifier attaches to a VP layer below the modal verb, so that the modal verb is not part of the degree relation argument of DegP, and, conversely, the DegP is *within* the scope of the modal verb. This is illustrated in (26). The tree in (26) expresses the assertion that what Sarah needs to do is collect more signatures than Nabil does, regardless how many that is. The wide scope interpretation of DegP in (25) is true in a case in which Sarah's need is not to collect more signatures than Nabil, but merely to collect a certain number of signatures (70 in the context mentioned). (25) expresses that this number happens to be more than the number of signatures Nabil needs to collect. The tree in (26), however, makes the comparative/equative claim part of the description that *la:zim* 'need' combines with, and therefore part of Sarah's need. If the proposition that the structure in (26) expresses is true, then regardless of how many signatures Nabil collects, Sarah needs to collect more.

(26)



As mentioned above, the low scope reading of DegP with respect to the modal verb *laːzim* is not very salient. But this reading is the salient reading of the examples in (27) with the modal verb *bidd*-AGR 'want', supporting the claim that the low scope configuration of DegP with respect to a modal verb is in principle available to DegP. It makes more sense that Sarah might *want* to 'beat' (with *aktar*) or 'tie' (with *ʔadd*) Nabil at signature collecting than that she *needs* to do so. Consequently, the relevant reading is more salient in (27a) and (27b) than in (23) and (24). That is, DegP scopes below *bidd*-AGR 'want' more readily than below *laːzim*, probably for pragmatic reasons. Both scope configurations are in principle available.

(27) a. *saːra* *bidd-a* *t-ʒammiʕ* *tawaːqiːʕ* *aktar min* *nabiːl*
Sarah want-3FS 3FS-collect signatures more than Nabil
(i) 'Sarah wants to collect more signatures than Nabil wants to collect.'
(ii) 'Sarah wants to collect more signatures than Nabil collects.'

b. *saːra* *bidd-a* *t-ʒammiʕ* *tawaːqiːʕ* *ʔadd* *nabiːl*
Sarah want-3FS 3FS-collect signatures EQ Nabil
(i) 'Sarah wants to collect as many signatures as Nabil wants to collect.'
(ii) 'Sarah wants to collect as many signatures as Nabil collects.'

The crucial point for the present purposes is that both *aktar* and *ʔadd* display the same ambiguities. That is, the syntactic mechanisms that determine scope affect *ʔadd* in the same way as *aktar*, reinforcing the point that both belong to the same syntactic class (DegP).

Further, both *aktar* and *ʔadd* as VP adjuncts allow variation in what functions as the subject of comparison when more than one potential focus is available. These ambiguities correlate with movement of other material out of the degree relation at LF, altering the content of the degree relation (Heim 1985). For example, the comparative in (28) can be construed to assert that Nabil gave more flowers to Sarah than he gave Nuha, or that he gave more flowers to Sarah than *Nuha* gave to Sarah.[2]

[2] Al-Bitar (2019, p. 46) presents the example in (i) below that makes the same point. There, *l-matʿbax* 'the kitchen' must extract from the noun phrase containing it to derive the structure

(28) *nabiːl ʕatˁa warᵊd la-saːra aktar min nuha*
Nabil gave flowers to-Sarah more than Nuha
(i) 'Nabil gave more flowers to Sarah than he gave to Nuha.'
(ii) 'Nabil gave more flowers to Sarah than Nuha gave to her.'

Example (29) demonstrates that *ʔadd* displays the same ambiguity.

(29) *nabiːl ʕatˁa warᵊd la-saːra ʔadd nuha*
Nabil gave flowers to-Sarah EQ Nuha
(i) 'Nabil gave as many flowers to Sarah as he gave to Nuha.'
(ii) 'Nabil gave as many flowers to Sarah as Nuha gave to her.'

A reviewer of this chapter notes that (29) may also be construed to assert that Nabil gave Sarah a bouquet of flowers as large as Nuha's bouquet. It is unclear whether this represents the basic use of the noun *ʔadd* meaning 'size' or the degree quantifier use, where the degree relation is abstracted over a degree argument representing the size of the bouquet of flowers. The fact that *ʔadd* is linearly separated from the term denoting the flowers whose size it describes is, as I have argued at length, typical of degree quantifiers in Syrian Arabic. However, it is unclear what the semantic composition of this interpretation looks like, in contrast to the pure degree quantifier use, which I describe in section 5. I therefore leave this matter unresolved pending a closer investigation of the contexts in which *ʔadd* refers literally to the physical size of its scalar associate.

In both (28) and the parallel quantity-of-flowers interpretation of (29), the degree quantifier adjoins to VP, which functions as a degree relation. What degree relation it denotes is affected by covert displacement of the the subject of comparison from its surface position, deriving a semantic representation that differs form the surface form. On the (i)-reading in the

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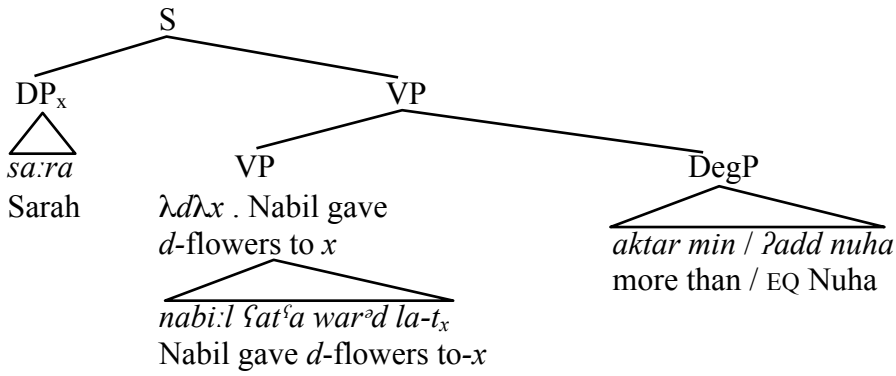
sketched in (ii) at LF, that allows us to compare the kitchen and the balcony as values for *x* in the bracketed degree relation.

(i) *l-akal b-ᵊl-matˁbax aħsan min l-balkoːn.*
the-eating in-the-kitchen better from the-balcony
'Eating in the kitchen is better than the balcony.'

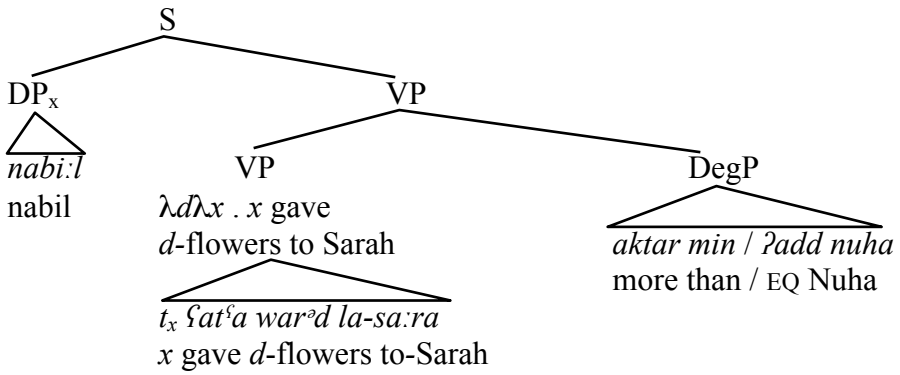
(ii) the kitchen [[eating in *x* is good] more than the balcony]

examples above, we compare Sarah and Nuha in terms of how many flowers Nabil gave to them. In that case, the degree relation is '$\lambda d \lambda x$. Nabil gave *d*-many flowers to *x*', where we have extracted the DP *Sarah* from the degree relation and left a variable *x* in its place. On the (ii)-reading we compare Nabil and Sarah in terms of how many flowers they gave to Sarah. In that case, the degree relation is '$\lambda d \lambda x$. *x* gave *d*-many flowers to Sarah', where we have extracted the DP *Nabil* and left a variable *x* in its place. The logical forms corresponding to the (i)- and (ii)-readings, which are derived by covert movement and differ from the surface forms, are illustrated in (30) and (31) below respectively. In each case we have extracted a different DP from VP in the LF, changing the content of the degree relation as notated under the (lower) VP node.

(30)



(31)



The crucial point for the present purposes is that both *aktar* and *ʔadd* are compatible with this ambiguity in the content of the degree relation, reinforcing the point that both are degree quantifiers, and the syntactic mechanisms that define a degree relation at LF feed into the interpretation of equative *ʔadd* in the same way as comparative *aktar*.

An additional parallel between *ʔadd* and *aktar* is that both are compatible with factor modifiers like *marrateːn* 'twice', as (32) and (33) demonstrate, although *aktar* somewhat more productively than *ʔadd*.

(32) saːra atˤwal min nabiːl b-marrat-eːn
Sarah taller than Nabil by-time-DUAL
'Sarah is two times taller than Nabil.'

(33) saːra tˤawiːle ʔadd nabiːl b-marrat-eːn
Sarah taller EQ Nabil by-time-DUAL
'Sarah is two times as tall as Nabil.'

Two of the five speakers surveyed prefer the syntactic format in (34) over (33), though they accept (33) as well. *ʔadd* appears to be functioning as a degree quantifier here as well. I return to the format in (33) in section 5.

(34) tˤuːl saːra ʔadd tˤuːl nabiːl b-marrat-eːn
height Sarah EQ height Nabil by-time-DUAL
'Sarahs height is two times as much as Nabil's height.'

Another parallel between *aktar* and *ʔadd* (albeit a 'negative' parallel) is that neither may modify the differential argument of the comparative. This is different from English, but *ʔadd* patterns together with *aktar* in this respect. As Bresnan (1973), Hellan (1981), von Stechow (1984) and others discuss, comparative *more than* has a 'differential' argument, saturated by the number *three* in (35a). But this argument may also be modified by equative *as many as*, as (35b) shows. (35b) means that the Sarah and Karim have the same number of marbles more than Nabil. In principle, the comparative itself may modify the degree argument of the comparative, though the result is a bit convoluted. While not terribly easy to parse, some reflection reveals that (35c) asserts that the difference between the number of marbles Sarah and Nabil have is greater than the difference between the number of marbles Karim and Nabil have.

(35) a. Sarah has three marbles more than Nabil.
b. Sarah has as many marbles more than Nabil as Karim does.
c. Sarah has more marbles more than Nabil than Karim does.

English (35a) is expressed as (36) in Arabic.

(36) *saːra ʕand-a tlet daħal-aːt aktar min nabiːl*
Sarah at-her three marble-PL more than Nabil
'Sarah has three more marbles than Nabil.'

But however convoluted the English sentences in (35b-c) are, the Arabic counterparts in (37) and (38) are incomprehensible. So while the Arabic comparative supports a differential argument in principle, saturated by *tlet* 'three' in (36), that differential argument cannot be bound by a comparative or equative quantifier. Crucially for the present purposes, the equative patterns together with the comparative in this respect.

(37) * *saːra ʕand-a daħal aktar min nabiːl ʔadd kariːm*
Sarah at-her marbles more than Nabil EQ Karim
('Sarah has as many more marbles than Nabil as Karim does.')

(38) * *saːra ʕand-a daħal aktar min nabiːl aktar min kariːm*
Sarah at-her marbles more than Nabil more than Karim
('Sarah has more marbles more than Nabil than Karim does.')

An additional parallel between *ʔadd* and *aktar* is that both may function as both 'phrasal' and 'clausal' degree quantifiers, and the difference is marked in the same way in the two constructions. Cross-linguistically, the 'phrasal' comparative combines with a nominal standard phrase, i.e. a DP. This DP is typically introduced by a preposition, and this prepositional phrase may not contain fragments of sentences or any type of constituent other than DP (Hankamer 1973, Bhatt and Takahashi 2011). This contrasts with the 'clausal' comparative found in languages like English. In this construction, the standard is typically introduced by a complementizer-like element (*than* in English) that in turn introduces a finite clause, though the scalar associate itself is typically elided, as in (39a) with elided *flowers*

(Lechner 2001, 2004). The clause can be further elided to the extent that only material in focus is overt, as in (39b).

(39) a. John gave more flowers to Sarah than he gave ~~flowers~~ to Mary.
b. John gave more flowers to Sarah than ~~he gave flowers~~ to Mary.

The Arabic comparative constructions illustrated in (1), (2) and elsewhere above display the behavior of phrasal comparatives. Comparative *aktar* selects the preposition *min* 'from', which in turn must combine with a DP. Arabic does not tolerate sentence fragments like a prepositional phrase in the *min*-phrase, as (40) shows (in contrast to English (39b)). As (40) also shows, *ʔadd* obeys this same restriction. Comparative *aktar* and equative *ʔadd* differ in that the former introduces the standard of comparison in a prepositional phrase and the latter as a direct syntactic dependent of *ʔadd*, a difference that I suggested in section 3 can be traced to the internally adjectival vs. nominal character of *aktar* and *ʔadd* respectively. Other than this, *aktar min* patterns the same as *ʔadd* with respect to their incompatibility with a clause or fragments of a clause.

(40) * *nabiːl ʕatˤa warᵊd la-saːra aktar min / ʔadd la-nuha.*
Nabil gave flowers to-Sarah more than / EQ to-Nuha
('Nabil gave more / as many flowers to Sarah than /as to Nuha.')

Arabic nonetheless disposes over a clausal comparative (and equative) construction, but this is morphologically distinguished from the phrasal comparative (and equative). Comparative *aktar min* may be followed by a clause if that clause is nominalized by the nominalizing complementizer *ma* 'that' (See McNabb & Kennedy 2011 on the closely related Palestinian dialect). The preposition *min* assimilates to following *ma* to form the compound *mimma* in this case.

(41) *nabiːl ʕatˤa warᵊd la-saːra aktar mim-ma ʕatˤa la-nuha.*
Nabil gave flowers to-Sarah more than-that gave to-Nuha
'Nabil gave more flowers to Sarah than he gave to Nuha.'

These clausal standards in Arabic do not tolerate ellipsis of more than the scalar associate itself (*warʾd* 'flowers' in (41)), so that it is not possible even with *ma* to replicate English (31), as (42) illustrates.

(42) * *nabiːl ʕatʿa warʾd la-saːra aktar mim-ma la-nuha.*
Nabil gave flowers to-Sarah more than-that to-Nuha
('Nabil gave more flowers to Sarah than to Nuha.')

This clausal comparative construction has a counterpart with *ʔadd*. Equative *ʔadd* may occur in construct with a clause nominalized by *ma*, which denotes the standard in an equative comparison, as illustrated in (43). Here, too, we cannot delete non-focused material like the verb *ʕatʿa* 'give' in the *ma*-clause, on the model of (42).

(43) *nabiːl ʕatʿa warʾd la-saːra ʔadd-ma ʕatʿa la-nuha.*
Nabil gave flowers to-Sarah EQ -that gave to-Nuha
'Nabil gave as many flowers to Sarah as he gave to Nuha.'

Although there is no difference in acceptability between (41) and (43), there is apparently for some speakers a difference in register. Some (but not all) speakers report that the clausal comparative in (41) has a somewhat literary tone, while all speakers find (43) fully colloquial. While the two constructions seem (for some speakers) to be associated with different registers, both are fully grammatical in Syrian Arabic.

The various parallels between *aktar* and *ʔadd* elucidated above suggest that these belong to the same distributional and semantic class. I conclude that *ʔadd* is a degree quantifier, like *aktar*. Intuitively, *ʔadd* says two quantities are the same, while *aktar* says one is greater than the other. I expand on the difference in meaning in the following section.

5. On the meaning of *ʔadd*

Recall the definition of the comparative in (4), repeated in (44). As mentioned there, this definition is based on the assumption that gradable predicates are downward entailing on their degree argument (Heim 1985). Consider in this connection a statement like (45).

(44) $[\![\text{aCCaC}]\!] = \lambda x_e \lambda R_{<d,<e,t>>} \lambda y_e \, . \, \{d \mid R(y,d)\} \supset \{d \mid R(x,d)\}$

(45) *ʕand-i* *daħal* *aktar* *minn-ak.*
at-me marbles more than-you
'I have more marbles than you.'

In (45), we are comparing me and you in terms of the degree relation '$\lambda d \lambda x$. *x* has *d*-many marbles'. The degrees *d* correspond to numbers of marbles. The assumption that this degree relation is downward entailing means that when it is valid for a number *d*, it is also valid for every number less than *d*. That is, if you have ten marbles then you also have nine, eight, seven, etc. For that reason, if you have ten and someone says 'You need five marbles to play this game', you can play, even though five is not the maximum number of marbles you have. Having ten entails having five.

The fact that the sentence 'I have ten marbles' is generally understood to specify the maximal number of marbles you have is due to pragmatic pressure on speakers to make the strongest claim they know to be true (Grice 1975). If I have ten marbles and no more, this dictum requires me to assert 'I have ten marbles'. If I asserted 'I have nine marbles', this would be true but would not be the strongest statement I can make, since another true statement entails it, namely the 'maximally' true statement 'I have ten marbles'.

The equative degree quantifier *ʔadd* appears at first glance to be like *aktar* except that rather than putting two degree sets in the proper superset relation, it says they are equivalent. It is tempting, that is, to take (46) to be asserting that you and I bear the 'have marbles'

relation to the same set of degrees (the set containing the degrees 1 through 10 in the situation sketched above). This would make *ʔadd* comparable to *exactly as many as* in English.

(46) *ʕand-i* *daħal* *ʔadd-ak.*
at-me marbles EQ-you
'I have as many marbles as you.'

But if this were so, then the negation of (46), shown in (47a), would assert that we do not have exactly the same number of marbles, but that is not exactly what (47a) means. The phrase *not exactly as many as* means the same as *either more than or less than*. In reality, though, (47a) is judged synonymous with (47b), the assertion that I have fewer marbles than you, and is judged to contradict (45), that I have more marbles than you. That is, the negation of *ʔadd* means *neither exactly as many as nor more than* and so entails *less than*. That means that non-negated *ʔadd* must mean *as many as or more than*.

(47) a. *ma* *ʕand-i* *daħal* *ʔadd-ak.*
not at-me marbles EQ-you
'I don't have as many marbles as you.'

b. *ʕand-i* *daħal* *aʔall* *minn-ak.*
at-me marbles less than-you
'I have fewer marbles than you.'

These facts replicate the behavior of English *as many as* in the translation to (47a), which also entails the translation to (47b) and contradicts the translation to (45). For the reasons sketched above for Arabic, English *as many as* is analyzed by Horn (1972), Klein (1980), von Stechow (1984), Bierwisch (1989), Rett (2015a,b, 2020) and others as putting two degree sets in the 'greater than or equal to' relation, spelled out in (48) as 'including or equal to' in parallel to the definition of the comparative in (44). According to this definition, *ʔadd* combines with a standard of comparison *x* (you in (46)), a degree relation *R* ('λ*d*λ*x* . *x* has *d*-many marbles' in (46)) and a subject of comparison *y* (me in (46)), and says that the degrees to which *y* bears *R* are a superset of or equal to the degrees to which *x* bears *R*.

(48) $[\![\text{ʔadd}]\!] = \lambda x_e \lambda R_{<d,<e,t>>} \lambda y_e \, . \, \{d \mid R(y,d)\} \supseteq \{d \mid R(x,d)\}$

Suppose you and I both have five marbles. Then the set of degrees to which I bear the 'have that many marbles' relation is {1, 2, 3, 4, 5} and the set of degrees to which you bear the relation is also {1, 2, 3, 4, 5}. This situation validates the claim in (46). If you only have three marbles, then the set of degrees to which you bear the 'have that many marbles' relation is {1, 2, 3}, and this situation also verifies the claim in (46) on the definition of *ʔadd* in (48), since that definition requires the subject of comparison (me in this example) to have *at least* as many marbles as the standard of comparison (you in this example). This situation derives the fact that the negation of (46) seen in (47a) entails (47b), since if the number of marbles I have is not the same as or more than the number you have, then it is fewer.

But this meaning for *ʔadd* is counterintuitive in ordinary positive environments, where *ʔadd* is intuitively understood to mean *exactly as many as*. This intuition is compatible with the definition in (48) if in ordinary positive environments the *at least as many* claim that *ʔadd* makes is augmented with the condition *and not more*. *At least as many as and not more* is the same as *exactly as many*. Pragmatic research on English has demonstrated that the extra *and not more* condition in positive environments is a Gricean implicature. The definitions in (44) and (48) make clear that *aktar* entails *ʔadd*: the 'more than' claim that *aktar* makes is a subcase of the 'more than or equal to' claim that *ʔadd* makes. But *ʔadd* does not entail *aktar*, because *ʔadd* is compatible with the two degree sets it compares being identical, while *aktar* is not. Because of this, *aktar* is the 'stronger' of the two terms, the one that asymmetrically entails the other (Horn 1972). Again, maxims of cooperative discourse require interlocutors to make the strongest claim they can truthfully make. If someone utters (46), their interlocutor can infer that they are making the strongest claim they can make, and therefore that the stronger claim in (45) is false. Therefore, in non-negative environments, *ʔadd* comes out as

meaning ‘exactly as many as’. But the ‘exactly’ part is a pragmatic implicature, not part of the semantic denotation of *ʔadd*.

I mention here in passing that the clausal versions of *aktar* and *ʔadd* shown in (41) and (43) and repeated in (49) and (50) below have a different argument structure than the phrasal versions, though they denote the same fundamental relation as their phrasal counterparts (proper and non-proper superset respectively).

(49) *nabiːl ʕatˁa warˤd la-saːra aktar mim-ma ʕatˁa la-nuha*
Nabil gave flowers to-Sarah more than-that gave to-Nuha
‘Nabil gave more flowers to Sarah than he gave to Nuha.’

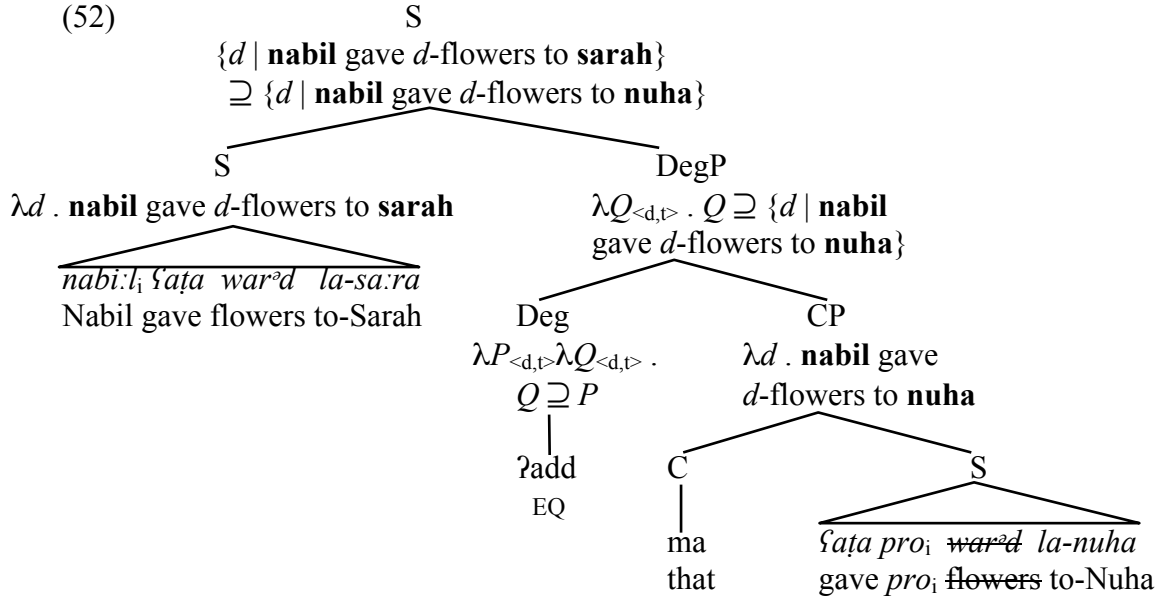
(50) *nabiːl ʕatˁa warˤd la-saːra ʔadd-ma ʕatˁa la-nuha*
Nabil gave flowers to-Sarah EQ -that gave to-Nuha
‘Nabil gave as many flowers to Sarah as he gave to Nuha.’

On their phrasal use, *aktar min* and *ʔadd* combine with a DP denoting an individual. Then the complex *aktar min*+DP or *ʔadd*+DP combines with a degree relation and ultimately with a subject of comparison. But on their clausal use, *aktar min* and *ʔadd* combine with a clause introduced by the complementizer *ma*, which in turn cliticizes to the governing preposition (*min*) or noun (*ʔadd*). Seuren (1973), Hoeksema (1983), Gawron (1995), Heim (2001) and others, including McNabb and Kennedy (2011) on Palestinian Arabic, propose an analysis of clausal comparatives according to which comparative *more* combines with two degree predicates, rather than two individuals and degree relation. This analysis extends to clausal equative *ʔadd* in the following manner. In combination with a sentence containing an accessible scalar term, the complementizer *ma* derives a degree predicate abstracted over the degree argument of the scalar term. This degree predicate is one argument of the degree-predicate relation that *ʔadd* denotes as a clausal DegP. The other is the matrix clause, also construed as a degree predicate over a scalar term. Equative *ʔadd* puts these two degree predicates in the non-proper superset relation, as the definition in (51b) reflects, parallel to the clausal use of *aktar* defined in (51a). The LF configuration in which *ʔadd* composes with its

degree-predicate arguments is depicted in (52). The composition assumes that lambda abstraction is interchangeable with set abstraction, so that for any x and P, $\lambda x.P(x)$ is equivalent to $\{x|P(x)\}$.

(51) a. $[\![\text{aCCaC}]\!] = \lambda P_{<d,t>}\lambda Q_{<d,t>} . Q \supset P$
b. $[\![\text{ʔadd}]\!] = \lambda P_{<d,t>}\lambda Q_{<d,t>} . Q \supseteq P$

(52)



I assume, too, that the definition of *ʔadd* in (51b) is at the heart of the use of *ʔadd* in example (34), repeated in part in (53). Here, *ʔadd* does not combine with an individual directly but with the expression *tˁu:l nabi:l* 'Nabil's height', which seems to denote the same thing as *ma nabi:l tˁawi:l* literally 'that Nabil is tall', or more perspicuously 'the extent to which Nabil is tall', which is the set of degrees to which he is tall. A more precise characterization of the meaning of *ʔadd* in (34)/(53) must await a conclusive analyses of the meaning of expressions like *tˁu:l nabi:l* 'Nabil's height', which I do not undertake here.

(53) tˁu:l sa:ra ʔadd tˁu:l nabi:l
height Sarah EQ height Nabil
'Sarah's height is as much as Nabil's height.'

The interesting question of whether or how the clausal and phrasal comparative and equative are related to one another is an interesting matter that I do not pursue here. It is not obvious that the observations made here about *ʔadd* provide any new insight into this matter in and of themselves, though the morphological difference between phrasal and clausal degree quantifiers in Arabic, namely the occurrence of the complementizer *ma* in the latter, might ultimately be a useful clue.

6. Conclusion

This paper has shown that the word *ʔadd* is used in the same way as the comparative degree quantifier *aktar*, modulo one morphosyntactic difference: *aktar* combines with its internal argument DP through the mediation of a preposition *min* 'from', while *ʔadd* combines directly, a difference presumably related to the adjectival vs. nominal character of *aktar* and *ʔadd* respectively. Otherwise, both *aktar* and *ʔadd* combine semantically with two entities and a degree relation. For both terms, their degree relation argument (AP or VP) is fixed by their position in the syntax as adjunct of AP or VP. This constituent must be construable as a degree relation, which is subject to various constraints, foremost the fact that a degree chain may not cross over a DP boundary in the surface structure. Both *aktar* and *ʔadd* display the same ambiguities with respect to modal verbs, modulated by their structural scope. And both *aktar* and *ʔadd* allow the same range of movement-induced variation in the subject of comparison, depending on how the content of the degree relation they combine with is altered by extraction of elements within it at LF. The various parallels described here support the conclusion that *ʔadd* is a degree quantifier like *aktar*. Its entailment pattern with negation indicates it is semantically weaker than *aktar*.

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