

ARABIC SEMANTICS<sup>1</sup>

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## 1 Introduction

Semantics, the study of meaning, is as multifaceted a discipline as its subject matter itself. Contemporary theoretical linguistic semantics concerns itself primarily with the relatively narrow but consequential goal of identifying the regularities in the relation between form and meaning in human languages. The fact that it is possible for speakers of a language to comprehend sentences they have never heard before means that comprehension is procedural: speakers analyze an unfamiliar sentence into its familiar component parts and then derive the meaning of the whole with reference to the manner in which those parts are combined. They do this by virtue of rules that connect the syntactic juxtaposition of the parts to the way their meanings are integrated in the whole. These rules, and the meanings of the terms they combine, are the subject matter of contemporary linguistic semantics. This chapter discusses some phenomena in Arabic and its varieties that have attracted the attention of semanticists, and makes some suggestions for future directions in this area.

## 2 Historical background and perspective

The Arabic grammatical tradition is quite old, with the first written grammatical treatises originating in the eighth century. This tradition was primarily concerned with documenting the form of the language spoken at that time, but also identified grammatical regularities in it that, together with the emergence of a technical vocabulary for grammatical description, has hallmarks of a theory of grammar (Owens 1990). Research in Europe in the 19th century on the foundations of mathematics led to the development of modern logic, which in turn formed the basis of the development of model-theoretic semantics for human language in the 1960s and 70s (see particularly the work of Montague 1970, 1973). In this theory, the derivation of the meaning of a sentence from the meanings of its parts is modelled using mathematical tools, particularly set theory. The formal descriptive precision that these tools make possible has led to striking progress in our understanding of the manner in which human language utterances are interpreted. Since the development of this framework, Arabic has not been subject to substantial formal semantic analysis, meaning that Arabic still stands to make significant new empirical and theoretical contributions to the development of the field of semantics. Some

issues that have received attention are described in sections 3 and 4, while section 5 describes some aspects of Arabic that appear to represent fertile territory for future semantic inquiry.

## 3 Critical issues and topics

The most significant issues in contemporary semantic theory have to do with the interpretation of 'variable binding operators'. These are words or phrases that talk about the value of a place-holding variable somewhere else in the sentence they occur in. For example, *Every dog barked* asserts that every value of the variable  $x$  that is a dog validates the assertion  $x$  barked, when substituted for  $x$ . Similarly, *Only Fido barked* asserts that no value of  $x$  validates  $x$  barked other than Fido. Likewise, *Fido ate more biscuits than Spot* asserts that the value of  $x$  in *Fido ate  $x$ -many biscuits* exceeds the value of  $y$  in *Spot ate  $y$ -many biscuits*. A sentence like *Fido ate three biscuits* asserts that 'three' validates *Fido ate  $x$ -many biscuits* when substituted for  $x$ . Less obviously, terms expressing tense fall into this category, since they talk about values for time variables. A sentence like *Fido ate biscuits* asserts that there is a value for the time variable  $x$  that temporally precedes 'now' and that validates *Fido eats biscuits at time  $x$* . Still less obviously, many terms control the value of variables for hypothetical situations or 'possible worlds'. When we say *If Fido barks, the baby will cry*, we are saying that in every possible situation  $x$  that validates *Fido barks in  $x$*  (whether he actually ever does bark or not) also validates *The baby will cry in  $x$* . We will see in section 4 that, as with other languages, semantic research on Arabic has concerned itself primarily with the function and meaning of variable binding operators in their full variety. A few issues in Arabic semantics arguably fall outside of this general trend, such as derivational verb morphology, discussed in section 4.7, and pragmatics, not treated here but discussed by Haddad in Chapter 8 (this volume).

## 4 Current contributions and research

This section describes significant current research on Arabic in the areas of the interpretation of number, degree, quantification, quantifier interactions, definiteness, tense and aspect, and derivational verb morphology. Each of these terms is defined in its respective discussion.

## 4.1 Numeral constructions and number

'Numeral constructions' involve noun phrases containing numerals, such as *three dogs*, *twenty children*, etc., while 'number' refers to the singular/plural distinction marked in English on nouns as the suffix *-s* for plural and absence of *-s* for singular. A long-standing cross-linguistic issue in these related constructions concerns the collective/distributive opposition. A predicate distributes over a plural argument if the predicate is understood as holding of each member of the group the plural denotes. It is collective otherwise. On one hand, the collective example *The children gathered* describes a situation that no individual child can make true (cf. \**The child gathered*). Only the children as a group can gather. On the other hand, *the children smiled* is true only if the individual children in the group that *the children* refers to smile individually. The distributivity of the individuating predicate *smile* over members of the plurality *the children* has been argued to be a property of the predicate itself, not its plural subject, since the same plural subject may be interpreted collectively and distributively in a single sentence, as in *The children gathered and smiled*. This sentence means something like 'There is a group of children  $C$  such that  $C$  gathered and each member of  $C$  smiled'.

However, Ouwayda (2011, 2014, 2017) discusses facts from Lebanese Arabic that show that the collective/distributive distinction may be specified by the noun phrase itself, whether or not it may also be specified by the predicate. In Lebanese Arabic, numeral modifiers up to ten are accompanied by a plural noun (e.g. *tleet uuleed* 'three children') but those over ten are accompanied by a singular (e.g. *tleetiin walad*, lit. 'thirty child'). While the former systematically controls plural agreement on agreeing adjectives, verbs, and pronouns, the latter optionally controls either singular or plural agreement. It turns out that the choice has a semantic effect. A singular predicate in this context may only be interpreted distributively, while a plural predicate may be interpreted either distributively or collectively. Consequently, example (1a), where the verb bears the plural suffix *-u*, may either describe a situation in which 30 children each ate a cake of his or her own, or one in which the 30 children shared a single cake among themselves. Example (1b), with the verb in the unmarked singular form, may only describe the 'distributive' situation where the children each eat an entire cake.

- (1) a. *tleetiin walad ?akal-u ?aaleb gaato keemel* [Lebanese]  
 thirty child ate-pl. pie cake whole  
 (i) ✓Thirty children each ate a cake. (distributive)  
 (ii) ✓Thirty children shared one cake. (collective)
- b. *tleetiin walad ?akal-Ø ?aaleb gaato keemel*  
 thirty child ate-sg. pie cake whole  
 (i) ✓Thirty children each ate a cake. (distributive)  
 (ii) \*Thirty children shared one cake. (collective)

Ouwayda proposes that a noun is pluralized by a functional head labeled '#' projecting a #-Phrase (#P), which maps a basic singular Noun Phrase (NP) (a predicate of individuals) to a function from a number *n* to a predicate of plural individuals of size *n* whose every atom has the NP property (the property 'child' in [1]). In combination with a numeral, the head # derives a plurality with that cardinality. An NP pluralized in this way triggers plural agreement on its dependents, but only above the #P level. This analysis predicts that an adjective that modifies NP directly below #P will fail to show plural morphology, since it modifies a singular (the underlying NP), but an adjective above #P will show plural morphology, since it modifies a plural (#P itself). As Ouwayda shows, (2) bears out this prediction, where the adjectives line up from lowest to highest after the noun. Since the presence of a plural adjective reveals the presence of #P, a verb in that case must show plural agreement.

- (2) [[*tleetiin* [<sub>NP</sub> *telmiiz-Ø mnazzam-Ø*]] *kesleen-iin*] *htažž-(u)*. [Lebanese]  
 thirty student-sg. organized-sg. lazy-pl. complained-\*(pl.)  
 'Thirty lazy organized students complained'.

In the absence of #P, adjectives, verbs, and associated pronouns do not show plural agreement, and only a distributive reading is available. Ouwayda analyses this reading as the entailment of a special existential quantifier that, like #, combines with an NP and a numeral, but which derives a predicate of singularities, rather than pluralities as in the case of #. Since no plurality is introduced at any level in this case, no collective reading is available.

#### 4.2 Degree constructions

Degree constructions are a class of constructions that talk about the degree to which some property or quantity holds, such as superlative (3) and comparative constructions. Example (3) asserts that Mary climbed a mountain that has a greater degree of height than any other relevant mountain. A long-standing issue in the semantics of superlatives has to do with apparent differences between the construction's superficial form and its semantic composition. In English, the superlative morpheme *-st* occurs on the adjective that provides its scale of comparison (or adjacent to it in the form of *most* if the adjective does not accept the *-st* suffix for morphophonemic reasons). Heim (1985, 1999, 2001), Szabolcsi (1986), and others claim that *-st* is displaced from its surface position and adjoins either to NP (3a) or the Verb Phrase (VP) (3b) at the level of grammatical representation at which the interpretation of the sentence is fixed.

- (3) Mary climbed the highest mountain.  
 a. Mary climbed the [<sub>NP</sub> *d*-high mountain]  
 b. Mary [<sub>VP</sub> *d* climbed a *d*-high mountain]

According to this view, *-st* describes an entity as having the property that its complement denotes (NP in [3a] and VP in [3b]) to a greater degree than any other entity under consideration, where the surface host of *-st* provides the scale. The placement in (3a) yields what is called the 'absolute' reading of (3), where we compare the mountain that Mary climbed to other mountains in terms of height and assert that she climbed the absolute highest mountain there is. The placement in (3b) yields the 'relative' or 'comparative' reading, where we compare Mary to other mountain climbers in terms of the height of the mountains they climbed, and assert that she climbed a higher mountain than any of these other mountain climbers did. Other strategies have sought to derive these two readings from the single representation in (3a) or even with the superlative in situ on the host adjective, as in the base structure in (3) (Coppock and Beaver 2014; Farkas and Kiss 2000; Sharvit and Stateva 2002).

In Hallman (2016a), I show that superlative constructions in Syrian Arabic lend support to the displacement analysis of the two readings sketched in (3), because in Syrian, the superlative morpheme can be overtly separated from its scalar associate by some distance. The superlative morpheme is realized as the prosodic template *aC<sub>1</sub>C<sub>2</sub>aC<sub>3</sub>*, where each *C* represents one of the consonants in the root adjective. This morpheme canonically occurs pre-nominally in Syrian and other varieties of Arabic. Normally, the associated adjective fills in the consonantal tier of the template, yielding structures like (4a). Alternatively, though, the adjective may remain in its canonical post-nominal position (4b), in which case the superlative template is filled in by the adjective *ktair* 'much/many' by default, deriving *aktar*. In fact, subject to some configurational constraints, *aktar* may bind a degree argument anywhere within its scope, such as a gradable adverb (4c) or a plural noun (4d) in a relative clause. In each example, *aktar* and its scalar associate are boldface.

- (4) a. *nuha tlaš-it řala ařla řabal*. [Syrian]  
 nuha climbed-f. on highest mountain  
 'Nuha climbed the highest mountain'.
- b. *nuha tlaš-it řala **aktar** řabal řaali*.  
 nuha climbed-f. on most mountain high  
 'Nuha climbed the highest mountain'.

- c. l-istaaz      madaḥ      **aktar**      ṭaalib      haka      **bi-balaaya.**  
 the-professor    praised      most      student    spoke    with-eloquence  
 'The professor praised the student who spoke the most eloquently'.
- d. nuha      baas-it      **aktar**      šabb      ṣataa-ha      **warid.**  
 nuha      kissed-f.    most      boy      gave-her      flowers  
 'Nuha kissed the boy who gave her the most flowers'.

Example (4b) looks exactly like the logical form in (3a) postulated for the absolute reading of the English translational equivalent (3) on the displacement analysis, and the examples in (4c) and (4d) bear a resemblance to the structure postulated for the relative reading (3b), where the superlative occurs outside the verb phrase and binds a scalar associate within it. These observations from Syrian Arabic buttress the plausibility of the displacement analysis of their translational equivalents in English, where, again, the superlative always occurs directly adjacent to its scalar associate. I also observe (Hallman 2016a) that the displacement of the superlative in Syrian Arabic is subject to well-known constraints on syntactic movement, but also that the superlative cannot be interpreted structurally lower than its surface position. I postulate that the superlative morpheme is itself base generated in its surface position but that a null degree operator undergoes movement to the superlative morpheme, sketched in (5). Consequently, movement of the degree operator is subject to constraints on movement but *aktar* itself cannot be interpreted in the base position of the degree operator, since it does not originate there.

- (5) nuha      ṭlaṣ-it      ṣala      aktar       $Op_d$  [žabal]      *d-ṣaali*.  
 nuha      climbed-f.    on      most       $Op_d$  [mountain]      *d-high*  
 'Nuha climbed the highest mountain'.

### 4.3 Quantification

In a separate study, I investigate the use of the Standard Arabic superlative term *ʔakṭar* 'most' as a quantifier and its similarities to other superlative adjectives on one hand and to *kull* 'all/every' on the other (Hallman 2016b). All three terms may combine with a definite noun phrase with a partitive interpretation. These examples are noun phrases, not complete sentences.

- (6) a. ʔaṣṭaa      l-žibaaal      [Standard]  
 highest      the-mountains  
 'the highest of the mountains'
- b. ʔakṭar      l-žibaaal  
 most      the-mountains  
 'most of the mountains'
- c. kull      l-žibaaal  
 all      the-mountains  
 'all of the mountains'

In Hallman (2016b) I explore the possibility that just as (6a) refers to a subpart of the mountains in question that contains the highest ones, both (6b) and (6c) refer to a subpart

of the mountains that is 'greatest' in some respect. The standard analysis of English *most* in this usage retains the superlative semantics of *-st* (Hackl 2009). This meaning is stated informally in (7), where *x* is an individual and *R* is a property that can manifest itself to different degrees, in this case being a group of mountains whose degree of numerosity (cardinality) is at issue.

- (7) '*ʔakṭar(x, R)*' asserts that *x* is a part of *R* that has greater cardinality than any part of *R* that does not overlap with *x*.

On this view, (6b) refers to a subpart of the mountains that is greater in numerosity than any part it does not overlap with. If this part comprised less than half of the mountains, then another part would exist (the rest) that is greater than it in numerosity. As a result, (6b) can refer only to a subpart of the mountains that comprises more than half of them, which is the correct interpretation. I suggest in this work that *kull*, which shows substantial distributional similarities with *ʔakṭar*, can also be analysed as a superlative. By changing the non-overlap condition in (7) to a non-identity condition in (8), the individual *x* must now comprise not just more than half of the mountains (in this case), but all of them.

- (8) '*kull(x, R)*' asserts that *x* is a part of *R* that has greater cardinality than any part of *R* that is not identical with *x*.

If *x* did not comprise all of the mountains in question, there would inevitably be a larger subpart containing all of the mountains that is not identical to *x*, since it contains some mountains not in *x*, since *x* does not contain all the mountains. So *x* must comprise all the mountains. This analysis of the meaning of *kull* derives an interpretation for *kull* parallel to the interpretation of *ʔakṭar* in (6b), which itself contains the superlative morpheme found in (6a). This analysis maintains that the superlative semantics in (7) is the unifying thread in the three constructions in (6).

### 4.4 Quantifier interactions

Another issue related to quantification is the manner in which quantifiers interact with other operators in their syntactic environment and general syntactic rules, an area of grammar is that often referred to as the 'syntax-semantics interface'. An example of such an interaction is observed in Lebanese Arabic by Aoun and Benmamoun (1998). The quantifier *kəll mʕallme* 'every teacher' may 'distribute' over the topic phrase *ṭalmiiza ššītaan* 'her naughty student' in (9a) but not in (9b). That is, (9a) may be interpreted as asserting that you know that every teacher punished the respective naughty student of that teacher. That is, each teacher has her own naughty student whom she punished. In (9b), however, there is only one naughty student (the pronoun suffix *-a* 'her' refers in this case to some specific previously mentioned individual), and every teacher punished that student (after you left).

- (9) a. ṭalmiiz-a      š-šītaan      bt-aʕrf-o      [ʔənnə kəll      mʕallme  
 student-her    the-naughty    2-know-pl.      that    every    teacher.f.  
 ʔaaṣaṣ-ət-o].                                    [Lebanese]  
 punished-f.sg.-him  
 'Her naughty student, you know that every teacher punished him'.

- b. təlmiiz-a      š-šitaan      fallaj-to    [ʔablama      kəll      mʕallme  
 student-her      the-naughty      left-2.pl.    before      every      teacher.f  
 t-ʔaaʂəʂ-o].  
 3.f.sg.-punished-him  
 'Her naughty student, you left before every teacher punished him'.

In both examples, the object of *ʔaaʂəʂ* 'punish' is the pronoun -o 'him' which refers back to the phrase *təlmiiza ššitaan* 'her naughty student', which in turn functions as 'topic' of the sentence. This topic is interpreted as the one who is punished, by virtue of its relation to the pronoun. Aoun and Benmamoun (1998) point out that the clause containing the pronoun (the bracketed constituent in each example) is a complement to the verb in (9a) (it describes what is known) but a modifier of the verb in (9b) (it says when the leaving took place). They claim that when the pronoun that refers to the topic is in a complement clause, then the pronoun can be interpreted as an exact copy of the topic, so that (9a) means the same as *You know that every teacher punished her (respective) naughty student*. Essentially, the topic is shifted into the position of the pronoun at the level of syntactic representation that is 'fed' to the interpretive component of the grammar. However, when the pronoun that refers to the topic is in a modifier (or 'adjunct') clause as in (9b), the pronoun cannot be interpreted as a copy of the topic. Consequently, the topic can be shifted across a complement clause boundary but not a modifier clause boundary, an asymmetry known to affect syntactic transformations cross-linguistically (Ross 1967). Guilliot and Malkawi (2006) claim that the asymmetry is not found in Jordanian Arabic. There therefore appears to be some cross-dialectal variation in the availability of the readings in question, meaning the restriction at work in (9b) is not a grammatical universal. This and other aspects of the syntax-semantics interface have been investigated in Arabic.

#### 4.5 Definiteness

Definite nouns in Arabic are those prefixed with the definite article *ʔal* 'the'. This section discusses two issues related to the interpretation of definiteness in Arabic, one concerning interpretations available to definite and indefinite nominals and another concerning the definiteness of the 'construct state', a compounding-like construction common in the Semitic languages. It has been observed that languages differ with respect to the possibility of a 'bare' count noun – that is, a count noun without any determiner – occurring in an argument position, and this fact has been taken to reflect parametric variation in the semantic type of bare nouns. As Milsark (1974) and Carlson (1977) show, a bare singular noun in English is generally ungrammatical (10a), while bare plurals are ambiguous between an 'existential' and a 'generic' interpretation, depending on context (10b). *Dogs* has an existential reading as subject of *are playing*, paraphrasable as *There are some dogs that are playing* but a generic reading as subject of *love to play*, paraphrasable as *Dogs as a kind love to play* (examples from Chierchia 1998).

- (10) a. \*Dog loves to play/is playing outside.  
 b. Dogs love to play/are playing outside.      [generic/existential]

Longobardi (1994), Chierchia (1998), and others point out that in Romance languages, the distribution of the bare plurals is more restricted than in English (11a), and the generic reading

systematically requires the definite article (11b), an interpretation for the definite that is not available in English. The Italian definite plural then, may either refer directly to a specific plurality like English *the dogs* – the 'referential' reading – or be interpreted as a kind like English *dogs* – the generic reading.

- (11) a. \*Cani amano giocare / stanno giocando fuori. [Italian]  
 dogs love play / are playing outside  
 ('Dogs love to play/are playing outside'.)  
 b. I cani amano giocare. [referential or generic]  
 the dogs love play  
 '(The) dogs love to play'.

Fassi Fehri (2012) points out that Classical Arabic falls roughly within the Romance pattern, except that Arabic lacks an overt indefinite article. As a result, bare singulars are possible on an existential reading made possible by a covert indefinite article in (12a)–(12b). However, no generic reading is available to the bare plural in (12b). As in Italian (10b), the generic reading requires the definite article (12c). The indicative verb in Arabic may have either a progressive (= *be barking*) or a habitual (= *bark habitually* or *be capable of barking*) interpretation.

- (12) a. kalb-un                      ja-nbah-u.                                      [Standard]  
 dog-nom.                      3-bark-ind.  
 'A dog is barking'.                                      [existential]  
 b. kilaab-un                      ta-nbah-u.  
 dog-nom.                      3-bark-ind.  
 'Dogs are barking'.                                      [existential]  
 c. al-kilaab-u                      ta-nbah-u.  
 the-dogs-nom.                      3.pl.-bark-ind.  
 (i) 'The dogs are barking'.                                      [referential]  
 (ii) 'Dogs bark'.                                      [generic]

In Hallman (2016b), I point out that this fact explains another contrast between English and Arabic, namely the ungrammaticality of the literal equivalent of *all/most dogs* in Arabic (13a), as opposed to the definite counterpart (13b).

- (13) a. \*kull-u                      /                      ʔakθar-u                      kilaab-in                      [Standard]  
 all-nom.                      /                      most-nom.                      dogs-gen.  
 ('most dogs')  
 b. kull-u                      /                      ʔakθar-u                      al-kilaab-i  
 all-nom.                      /                      most-nom.                      the-dogs-gen.  
 'most (of the) dogs'

Cooper (1996), Mathewson (2001), Crnič (2010), and others have claimed that *all* and *most* combine with an individual-denoting term that ends up being interpreted partitively – (13b) compares parts of the referent of *al-kilaab* 'the dogs' in numerosity. Because bare plurals may refer directly to kinds in English (a sort of individual according to Carlson 1977),

they may combine with *all* and *most*. But in Arabic, like in Romance languages, indefinite nouns have only a predicative, existential interpretation, which precludes direct combination with *kull* or *ʔakθar*. As usual, the definite nominal in (13b) has a generic interpretation available to it analogous to the English bare plural. I also show (Hallman 2016b) that at least in the case of *ʔakθar al-kilaab* 'most (of the) dogs' it is clear that the expression as a whole is indefinite. It refers to a subgroup of the dogs in question (or dogs in general, depending on the interpretation of the definite) that constitutes more than half of the totality, but there is no unique such subgroup. Many distinct subgroups meet this criterion, meaning that the presupposition of uniqueness that typically accompanies definiteness is not present in (13b) (at least with *ʔakθar*). This fact supports Ouwayda's (2012) claim that construct state constructions like that in (13b) are semantically predicative, not referential, as described in the remainder of this section.

The construct state is a construction in which a bare noun is juxtaposed with a noun phrase that may vary in definiteness freely, as in Ouwayda's Lebanese Arabic example in (14). The construction typically expresses possession. Note that this example is a noun phrase, not a complete sentence.

- (14) kteeb            marjam            [Lebanese]  
 book            Maryam  
 'Maryam's book'

The definiteness of the construction as a whole is usually said to be inherited from the second term, as in (14), which presupposes that Maryam only has one (relevant) book. If this is the case, it means the construction in (14) as a whole denotes an individual – the unique book belonging to Maryam. But Ouwayda points out that an adjectival modifier cannot modify the first term directly, it must modify the construction as a whole (15). What shows this is that the adjective *ʔadiim* 'old' in (15) must be interpreted relative to Maryam's books, not relative to books in general. As a result, (15) may only assert that the book of Maryam's was here that was old relative to other books Maryam has, not relative to books in general. Example (15) is not appropriate if the book is a medieval manuscript, though that is a possible interpretation of the English translational equivalent, which is not a construct state.

- (15) kteeb            marjam            l-ʔadiim            keen            hoon.            [Lebanese]  
 book            Maryam            the-old            was            here  
 'Maryam's old book was here'.

This means that the expression in (14) can be modified by an adjective, which is characteristic of predicative expressions such as common nouns and not individual-denoting expressions like names or definites. Further, although the construct as a whole cannot be preceded by the definite article, the expression can be preceded by a numeral preserving the restrictive interpretation of the possession relation. That is, (16) may refer to three of Maryam's potentially many books. Like (14), (16) is a noun phrase, not a complete sentence.

- (16) tleet            kitub            marjam            [Lebanese]  
 three            books            Maryam  
 'three of Maryam's books'

Once again, this is a property of predicate-denoting noun phrases, not individual-denoting ones. Ouwayda's semantic analysis of the construct state makes the first term a relational noun that maps an individual-denoting second term to a predicate, i.e., an indefinite common-noun denotation. She claims that the definite article is excluded on the first term for morpho-syntactic reasons.

#### 4.6 Tense and aspect

Another area in which semantic inquiry has touched on Arabic relates to the interpretation of temporal and aspectual verb morphology. 'Tense' refers to the simple three-way distinction between past, present, and future. 'Aspect' refers to a class of constructions that, loosely speaking, talk about the 'shape' of an event. Vendler (1957) proposes a four-way typology of aspectual types, illustrated in more detail in (21)–(24). Above and beyond this classification, predicates may be morphologically marked in Arabic and other languages as either 'perfective' (signifying a completed event) or 'imperfective' (signifying an ongoing event). Typically, whether an event is complete or ongoing is itself understood with respect to a reference time whose relation to the time of utterance is determined by tense. In the case of Arabic, though, the distinction between tense and the perfective/imperfective opposition has been controversial. Though the early Arabic grammarians characterize what are traditionally called perfective (17a) and imperfective (17b) verb forms in Arabic as signifying the past and present tense respectively (Sibawayhi 796, vol 1, p. 69), some contemporary authors have characterized the distinction as a purely aspectual 'complete' vs. 'ongoing' opposition (Cantineau 1953; Cohen 1924; Wright 1858; and others).

- (17) a. qaraʔ-a                            l-walad-u            l-kitaab-a.            [Standard]  
 read.perf.-3.m.sg.            the-boy-nom.            the-book-acc.  
 'The boy read the book'.
- b. ja-qraʔ-u                            l-walad-u            l-kitaab-a.  
 3-read.imp.-ind.            the-boy-nom.            the-book-acc.  
 'The boy is reading the book'.

The aspectual view receives some preliminary support from the fact that the perfective morphology occurs in contexts other than past tense, and the imperfective in contexts other than present. The perfective may occur, for example, in the context of a future copular auxiliary, expressing the future perfect, as in (18). If tense relates the time of the eventuality described directly to the speech time, this fact is unexpected.

- (18) ja-kuun-u            qaraʔ-a                            l-walad-u            l-kitaab-a.            [Standard]  
 3-be.imp.-ind.            read.perf.-3.m.sg.            the-boy-nom.            the-book-acc.  
 'The boy will have read the book'.

However, Comrie (1976) and Fassi Fehri (2003a, 2004) argue that examples such as (18) demonstrate instead that tense interpretation is locally relative in Arabic, meaning that each verb form locates its eventuality time with respect to a reference time established by its local



- b. ʔana maalijjan məʕtəmed ʕalce-h.  
I financially depending on-him  
'I am financially dependent on him.'
- (26) a. ʔana ʒaaje ʔaddem ʔalab.  
I coming submit request  
'I have come to submit a request'.
- b. ʔ-ʔaʔʕ həlu wa-š-šams ʔaalʕa.  
the-weather beautiful and-the-sun coming.out  
'The weather is nice and the sun has come out'.

The resemblance between structures like those in (26) and the English perfect is reinforced by the fact that the state resulting from the event the underlying verb describes must still hold at the reference time, a semantic connotation the English perfect has (McCawley 1971; McCoard 1978). Example (26a) entails that the speaker is still present at the utterance time and (26b) that the sun is still out. As Cowell (1964) notes, while the perfect verb *labas* means *to put on*, said of clothing (27a), its active participle *laabis* means *to wear* (27b). That is, it asserts that whoever put on the clothes still has them on.

- (27) a. labas tjaab-u. [Syrian]  
put.on clothes-his  
'He put on his clothes'.
- b. laabis tjaab-u.  
putting.on clothes-his  
'He has put on his clothes'. (He is still wearing them)

In contrast to Brustad's assessment that the difference between (25) and (26) can be traced to telicity, Boneh (2010) develops an analysis of the basic pattern in (25) and (26) that posits a fundamental similarity between activities and accomplishments. She claims that the participle holds of a (post)-state invoked in the underlying verb denotation. If the underlying verb is an accomplishment, the participle describes the post-state of the transition the verb describes, whence the perfect reading in examples like (26). Activities, on her account, are like accomplishments, describing a complex event with a development portion and post-state portion. She supports this view with the observation that some verbs that function as activity verbs in English, such as *sleep*, have counterparts in Arabic that describe a transition, and whose participial derivatives describe a post-state. Hence, the participle *naajim* appears at first glance to be synonymous with English *sleeping* (28a). However, the underlying verb *naam* in (28b) does not have an activity reading, but only an accomplishment reading analogous to *fall asleep*, which the progressive construction in (28c) clarifies. The progressive in (28c) does not entail that Sami is asleep yet, unlike the English progressive counterpart of (28b) *Sami is sleeping*. Hence, *naam* means not *sleep* but *fall asleep* and the participle *naajim* means not *be sleeping* but *have fallen asleep*, the usual perfect reading of the participle.

- (28) a. saami naajim. [Syrian]  
sami sleeping  
'Sami has fallen asleep'.
- b. saami naam.  
sami sleep.prfv.  
'Sami fell asleep'.
- c. saami ʕam jinaam.  
sami prog. sleep.imp.  
'Sami is falling asleep'.

This analysis captures the fact that most verbs whose English counterparts are activity predicates have the perfect reading in the participial form in Arabic. If, as Boneh's analysis requires, a verb like *maššaʔ* (*comb*) in (29a) describes a transition of the state of Sami's hair, then, as expected, the progressive form in (29) locates the listener within that transition (as in (28c)), and the participle in (29c) describes the post-state of that transition.

- (29) a. saami maššaʔ šaʕr-u. [Syrian]  
sami comb.pftv. hair-his  
'Sami combed his hair'.
- b. saami ʕam jimaššit šaʕr-u.  
sami prog. comb.imp. hair-his  
'Sami is combing his hair'.
- c. saami mmaššit šaʕr-u.  
sami combing hair-his  
'Sami has combed his hair'.

However, some activity verbs do not display the pattern in (29). Verbs of directed motion such as *maša* (30a) (*walk, go*) have a durative interpretation in the participial form (30b) (in some dialects in addition to a perfect interpretation, as Brustad 2000 notes) that is synonymous with the corresponding progressive form (30c).

- (30) a. saami maša bi-š-šaʔ. [Syrian]  
sami walk.pftv. on-the-beach  
'Sami walked on the beach'.
- b. saami maaši bi-š-šaʔ.  
sami walking on-the-beach  
'Sami is walking on the beach'.
- c. saami ʕam jimši bi-š-šaʔ.  
sami prog. walk.imp. on-the-beach  
'Sami is walking on the beach'.

While it is not immediately obvious how Boneh's analysis might extend to these verbs, Pallottino (2013) makes the observation that in Tunisian Arabic, the addition of an endpoint

description to an otherwise atelic verb does not effect the interpretation of the corresponding active participle. Example (31a) asserts without the parenthesized material that Ali is walking – the durative reading typical of participles of atelic verbs like *maša* (*walk*). The parenthesized prepositional phrase contributes an endpoint to the spatial path associated with the walking event, making the underlying event description telic. The participial phrase *meši li-d-dar* (*walking to the house*), however, remains durative in interpretation. It does not receive the perfect interpretation typical of telic predicates (cf. (26)). This observation carries over to Syrian, as example (31b) shows (cf. [30c]).

- (31) a. ʕali            meši            (li-d-dar).            [Tunisian]  
           Ali            walking            (to-the-house)  
           ‘Ali is walking (to the house)’.
- b. saami            maaši            (ʕa-š-šatt).            [Syrian]  
           sami            walking            (to-the-beach)  
           ‘Sami is walking (to the beach)’.

This means that such predicates do not receive the perfect interpretation in the participial form even when they are augmented with material that makes them telic. On one hand, this observation reinforces Boneh’s point that activities and accomplishments pattern the same, activity verbs generally have the perfect reading of accomplishments in the participial form and activity verbs that for some reason have a durative reading in the participial form also have a durative reading when they are made into accomplishments by the addition of a telos. On the other hand, it remains unclear what is exceptional about verbs like *maša* (*walk*). For more on tense and aspect, see Ouali (Chapter 5 in this volume).

#### 4.7 Derivational verb morphology

Another issue that has attracted attention in the semantics of Arabic and other Semitic languages concerns how meaningful the verb templates, or ‘forms’, are. There are ten prosodic templates in modern Arabic from which a verb may be derived by placing the consonants of a root into the consonant positions in the template. The templates tend to contribute meaning of their own to the derived form, but the generalizations in Arabic appear to be riddled with exceptions. One clear generalization, articulated by Wright (1858, vol. 1, pp. 31ff) and analyzed by Fassi Fehri (2003b) and (in connection with the cognate Hebrew verb forms) Doron (2003), concerns the two causative templates  $C_1aC_2C_3aC_3$  (form II) and  $\lambda aC_1C_2aC_3$  (form IV), where  $C_{1-3}$  represent the three consonants of the root. Both (32b) and (32c) are causative derivatives of the intransitive verb in (32a). The external argument of the form II causative represents the immediate source of the action described by the verb, for which reason example (32b) implies that the captain acted with the intention to sink the ship. The form IV causative does not carry this connotation, and so is more readily compatible with the inanimate subject it has in (32c).

- (32) a. ʔariq-at            s-safinat-u.            [Standard]  
           sank<sub>1</sub>-3.f.sg.            the-ship-nom.  
           ‘The ship sank’.

- b. ʔarraq-a            l-qubṭaan-u            s-safinat-a.  
           sank<sub>II</sub>-3.m.sg.            the-captain-nom.            the-ship-acc.  
           ‘The captain sank the ship’.
- c. ʔayraq-at            l-ʕaaṣifat-u            s-safinat-a.  
           sank<sub>IV</sub>-3.f.sg.            the-storm-nom.            the-ship-acc.  
           ‘The storm sank the ship’.

Doron claims that the form II template characterizes the external argument of the underlying verb as what she calls an ‘actor’, while form IV is genuinely causative. Form II may, but need not, actually add an external argument. This accommodates the fact that form II does not always add an argument to the corresponding form I verb, unlike form IV. A purely intensivizing use of the second form of a transitive verb, that does not introduce an additional argument, is illustrated by verbs like *daraba* (*hit*), which in the second form (*darraba*) is still transitive but means ‘beat severely’. Yet, it is not clear that the intensivizing function of form II can be reduced to the thematic status of the subject. Fassi Fehri (2003b) describes the intensivizing function of Arabic form II as pluractionality, i.e., pluralization of the event argument. While (33a) means that the (implicit singular) subject injured the man once, (33b) asserts that he inflicted many wounds on him. This pluractionality may distribute over a plural object, so that (33c) asserts that he injured many soldiers, inflicting one wound on each (Fassi Fehri 2003b:155).

- (33) a. ʔaraḥ-a            r-raḥul-a.            [Standard]  
           wounded-3.m.sg.            the-man-acc.  
           ‘He wounded the man’.
- b. ʔarraḥ-a            r-raḥul-a.  
           wounded-3.m.sg.            the-man-acc.  
           ‘He inflicted many wounds on the man’.
- c. ʔarraḥ-a            l-ḥunuud-a.  
           wounded-3.m.sg.            the-soldiers-nom.  
           ‘He wounded the soldiers’.

It is therefore unclear whether Doron’s characterization of the meaning of form II exclusively in terms of the relation of the subject to the event is adequate for Arabic. Doron makes another claim, however, that holds some promise, in connection with apparent exceptions to the pattern in (32). She claims that exceptions occur only for ‘singleton’ roots – roots that occur in only one form. Here, the form does not do any ‘work’ distinguishing lexical items in causativity and actionality and therefore carries no significance. Testing this hypothesis for Arabic requires further research, but it seems promising that there do not appear to be any verbs in Arabic that show the opposite pattern as that seen in (32), that is verbs whose form II is compatible with an indirect causer but whose form IV requires a direct ‘actor’.



## 5 Future directions

Arabic is underrepresented in the theoretical semantic literature, and therefore carries substantial potential to offer new empirical discoveries and novel theoretical contributions. I describe two areas in Arabic grammar that represent potentially fruitful areas of semantic inquiry and have gone largely unexplored, but many others are in need of documentation and analysis.

### 5.1 Modality and tense

Comrie (1976) cites the example in (34), from Wright (1858, vol. 2: 9), in support of the notion that perfective signifies relative past tense. The perfective subordinate verb *ħmarra* (*became ripe*) describes a time that is in the past with respect to a reference time established by the future interpretation of the imperfective verb *ʔaʔiiʔu* (*I come*). Although the relative tense view of Arabic has independent support, it is unexpected that the English translation to (34) contains a present tense verb, rather than a past tense verb on analogy to the parallelism in the interpretation of (19b), where both English and Arabic past tense is interpreted as locally relative, because the verb in question is eventive.

- (34) ʔa-ʔiiʔ-u-ka            ʔiðaa    ħmarr-a            l-busr-u.            [Standard]  
 1.sg.-come-ind.-you    when    redder-3.m.sg.    the-dates-nom.  
 'I will come to you when the dates become red'.

This observation suggests that the particle *ʔiðaa* (*if, when*) makes a semantic contribution of its own that interacts with the verb tense in Arabic. No compositional semantic account of this interaction has been articulated at the time of this writing. One thing such an account must accommodate is the fact, as Wright notes, that *ʔiðaa* may optionally be followed by a verb in the imperfective form, as in (35). He does not mention any difference in interpretation contingent on the morphological form of the verb. The particle *qad* in (35) reinforces the perfect interpretation of the following perfective verb.

- (35) wa-ʔiðaa    tu-tlaa            ʕalaj-him    ʔaajaat-u-naa            [Standard]  
 and-when    3.f.sg-read.imp.pass. to-them    verses-nom.-our  
 qaal-uu    qad    samiʕ-naa.  
 said.perf.-3.pl. QAD    heard-1.pl.  
 'And when our verses are read to them, they said we have heard.'

The occurrence of the perfect with *ʔiðaa* is presumably related to its occurrence with related particles such as the counterfactual conditional complementizer *law* (36a) (counterfactual *if*) and *maa* (36b) (*as long as*). Counterfactual *law* differs from conditional *ʔiðaa* in that it presupposes the falsity of the underlying proposition. (36b) presupposes that God did not wish to make mankind one nation. The examples that follow are from Wright (1858, vol. 2: 6–17).

- (36) a. law    ʕaaʔ-a            rabb-u-ka            la-ʔaʕal-a            [Standard]  
 if wished.perf.-3.m.sg. lord-nom.-your la-made.perf.-3.m.sg.  
 n-naas-a            ʔummat-an    waahidat-an.  
 the-people-acc.    nation-acc.    one-acc.  
 'If your lord had wished, he would have made mankind one nation'.
- b. ʔan-naas-u            maa            daam-uu            fii  
 the-people-nom.    as.long.as remained.perf.-3.m.pl. in  
 l-hajaat-i    d-dunjawijjat-i    yaafil-uuna.  
 the-life-gen. the-temporal-gen. careless-3.m.pl.  
 'People are careless as long as they remain in the life of this world'.

Wright mentions that as with *ʔiðaa*, the verb following *law* may occur in the imperfect, but here notes a difference in meaning. In this case, *law* has the meaning of the non-counterfactual conditional often expressed by *ʔiðaa*, one that does not presuppose the falsity of the underlying proposition.

- (37) law    na-ʕaaʔ-u            ʔaʕab-naa-hum            bi-ðunuub-i-him. [standard]  
 if 1.pl.-wish.imp.-ind. injured.perf.-1.pl.-them for-sins-gen.-their  
 'If we wished, we could injure them for their sin'.

The interactions between these modal and temporal particles and tense deserve careful investigation in connection with a thorough survey of native speaker judgments of entailment and contradiction in such cases independently of what the historical written record appears to show, which does not provide us with robust evidence of interpretational subtleties. This investigation promises to be fruitful both for the development of a rigorous theory of tense interpretation in Arabic and for the understanding of the semantic similarities between the particles in question, by virtue of which they all allow or require the perfect.

### 5.2 Focus particles and scalar semantics

The suggestion that the distinct particles discussed earlier share a component of meaning is similar to the case of particles that seem to show a semantic uniformity in superficially distinct usages. One example of such a particle is *ħatta*, meaning either *until* or *even*. In its *until* use, it combines with either a finite clause or a noun phrase, both illustrated in (38a). Its use meaning *even* is illustrated in (38b–c). These examples are from contemporary Syrian Arabic.

- (38) a. *ḡall-u ji-mš-u hatta ṭalaṡ-it š-šams /hatta* [Syrian]  
 kept-3.m.pl. 3.m.-walk-pl. until rose-3.f.sg. the-sun /until  
 ṭluuṡ š-šams.  
 rising the-sun  
 'They kept walking until the sun rose / until the rising of the sun'.
- b. *hatta kariim naḡaḡ bi-faḡš l-rijaaḡijjaat.*  
 even karim succeeded in-test the-math  
 'Even Karim passed the math test'.
- c. *kariim naḡaḡ hatta bi-faḡš l-rijaaḡijjaat.*  
 karim succeeded even in-test the-math  
 'Karim passed even the math test'.

In *hatta*'s use parallel to *until*, the following proposition or nominal describes what is the case at the endpoint of a scale associated with the verb, the path of the journey in (38a) (see Karttunen 1974; Mittwoch 1977; Smith 1974; also see de Swart 1996 on English *until*). In its use parallel to *even* it triggers 'focal' stress on another constituent in the sentence. Focus serves to factor the sentence into two parts: the focused constituent on one hand and the rest of the sentence on the other, with a variable in the place of the focused constituent. Focal stress on *Karim* factors (38b) into the constituents *Karim* and *x passed the test*. The particle *hatta* presupposes that *Karim* is ranked with other students in terms of how surprising they are as a value for *x* in *x passed the test*, and *Karim* is the most surprising value. It then asserts that the 'endpoint' of this scale of surprisal was reached, that is, everyone passed the test including *Karim*, the last person we expected to do so. Like *even*, then, *hatta* makes reference to a scale of likelihood (see Karttunen and Peters 1979; Rooth 1985; and Wilkinson 1996 on English *even* and its interaction with focus in general).

Both usages of *hatta* therefore make reference to a scale and occur in a context that specifies the endpoint of that scale. A formal semantic analysis is called for that demonstrates what these two clearly related usages of *hatta* have in common and in what respect they differ semantically. Such an analysis should also account for the connection evident in (38b-c) between the placement of *hatta* and the scale of comparison. In combination with a pre-verbal noun phrase in (38b), *hatta* ranks *Karim* with others in terms of the description *x passed the test*, while in (38c) it ranks the math test with other things in terms of the description *Karim passed x*. An analysis of this phenomenon should not only relate the meaning of *hatta* here to its use meaning *until*, but also account for restrictions on its distribution that distinguish Arabic from English, where the meaning of *even* is better studied. In particular, although *hatta* may combine with a topic noun phrase, as seen in (38b), it may not combine with a noun phrase inside a prepositional phrase (39a), nor may it occur by itself preceding a verb-initial clause (39b). It is also marginal with a post-verbal subject (39c).

- (39) a. *\*kariim naḡaḡ bi-hatta faḡš l-rijaaḡijjaat.* [Syrian]  
 karim succeeded in-even test the-math
- b. *\*hatta naḡaḡ kariim bi-faḡš l-rijaaḡijjaat.*  
 even succeeded karim in-test the-math
- c. *?\*naḡaḡ hatta kariim bi-faḡš l-rijaaḡijjaat.*  
 succeeded even karim in-test the-math

Another focus particle in Syrian Arabic is *bas (only)* (*faqaṡ* in Standard Arabic), illustrated below. Possible positions for *hatta* are also possible positions for *bas*, and like *hatta*, the position of *bas* is linked to the interpretation of the sentence. Example (40a) says that no value for *x* other than *Karim* makes the sentence *x passed the test* true. Example (40b) says that nothing other than the math test makes the sentence *Karim passed x* true.

- (40) a. *bas kariim naḡaḡ bi-faḡš r-rijaaḡijjaat.* [Syrian]  
 only karim succeeded in-test the-math  
 'Only Karim passed the math test'.
- b. *kariim naḡaḡ bas bi-faḡš r-rijaaḡijjaat.*  
 karim succeeded only in-test the-math  
 'Karim passed only the math test'.

Restrictions on the distribution of *bas* are similar, but not identical, to restrictions on *hatta*. Like *hatta*, *bas* may not occur within a prepositional phrase (41a), and strongly prefers to be adjacent to the focused constituent (41b). Unlike *hatta*, though, it may occur with a post-verbal subject (41c).

- (41) a. *\*kariim naḡaḡ bi-bas faḡš r-rijaaḡijjaat.* [Syrian]  
 karim succeeded in-only test the-math
- b. *\*?bas naḡaḡ kariim bi-faḡš-rijaaḡijjaat.*  
 only succeeded karim in-test the-math
- c. *naḡaḡ bas kariim bi-faḡš r-rijaaḡijja*  
 succeeded only karim in-test the-math  
 'Only Karim passed the math test'.

An analysis of these and other focus particles is called for that considers the full repertoire of possible positions for *bas* and *hatta* and the meanings associated with them in cross linguistic perspective.

The notion expressed by *bas/faqat* 'only' can also be expressed in Arabic by the combination of negation with the particle *?illa* 'except'.

- (42) ma naʒaħ    ?illa    kariim bi-faħş r-rijaadijjaat. [Syrian]  
 not succeeded except karim in-test the-math  
 'No one but Karim passed the math test'.

However, Soltan (2016) shows that the exceptive particle differs from focus particles in a significant way. For example, while *hatta* and *faqat/bass* may occur sentence-initially, *?illaa* 'except' may not (43). The examples cited by Soltan are from Egyptian Arabic.

- (43) \*?illaa aħmad?anaa šuf-t kull ?il-ʔalaba fii [Egyptian]  
 except ahmad I saw 1.sg. all the-students in  
 ?il-muhaaʔdra.  
 the-lectur  
 ('Except for Ahmad, I saw all the students at the lecture.')'

- (44) a. anaa suf-t kull ?il-ʔalaba <?illaa aħm ad> [Egyptian]  
 I saw-1. sg. all the students <except ahmad>  
 fii ?il-muhaaʔdra ?il-naha:r-da <?iillaa aħmad>.  
 in the-lecture the-day- this < except ahmad>  
 'I saw all the students except Ahmad at the lecture today'.
- b. ?anaa ?it kallim-t maʕa kull ʔaalib <?\*?illaa maʕa  
 I talked-1.sg. with every student <\*except with  
 aħmad> talat saʕaat <?illaa maʕa aħmad>.  
 ahmad> three hours <except with ahmad>  
 'I talked to every student for three hours except with Ahmad'.

Soltan shows that otherwise, *?illaa* may precede a nominal phrase (44a) or a prepositional phrase (44b), but in the latter case the prepositional phrase must occur sentence-finally.

Soltan concludes from this and other evidence that *?illaa* is a kind of coordinator that may coordinate either two noun phrases, and then has the distribution of a noun phrase, as in (44a), or two sentences, where the repeated material in the second is elided, deriving (44b). The *?illaa* phrase occurs after its first conjunct in both cases. As a coordinator, *?illaa* has an entirely different distribution and meaning from the focus particles illustrated in (38)–(41).

## 6 Conclusion

We have seen that substantive and fruitful research has been conducted in Arabic Semantics in the areas of number, superlative degree constructions, quantification, definiteness, the syntax-semantics interface, tense and aspect, and derivational morphology. There appears to be a fertile basis for future work in the areas of modality and its relation to tense, focus particles, and scalar semantics, including degree constructions other than the superlative such as comparatives and *how many* questions. But these categories by no means exhaust the range of issues suitable for semantic analysis in Arabic. Since the development of the theory of semantics, like much of modern grammatical theory, has been primarily informed by Indo-European languages, research into Arabic semantics is significant in its potential to add new insights and rectify the underrepresentation of non-Indo-European languages in contemporary grammatical theory.

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### Further reading

- Boneh, N. and Sichel, E., 2010. Deconstructing possession. *Natural Language and Linguistic Theory*, 28, 1–40.
- This article discusses the connection between the choice of preposition used to express possession in Palestinian Arabic and the animacy and definiteness of the subject and the alienability of the possessive relation.
- Elghamry, K., 2004. Definiteness and number ambiguity in the superlative construction in Arabic. *Lingua*, 114, 897–910.
- This article treats the partitive superlative construction in Standard Arabic and documents parallels to quantifier constructions.
- McNabb, Y. and Kennedy, C., 2011. Extraction and deletion in Palestinian Arabic comparatives. In: E. Blosew and H. Ouali, eds. *Perspectives on Arabic linguistics XXII–XXIII*. Amsterdam: John Benjamins, 149–166.
- This article treats syntactic constraints on ellipsis in comparative constructions in Palestinian Arabic.

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