Floating quantifiers are autonomous phrases: A movement analysis

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Abstract Quantifier float (Q-float) is a phenomenon in which a quantifier is separated from the nominal it associates with (*The cookies will all have been eaten up by then!*). The phenomenon has received two major analyses: stranding and adjunction. The stranding analysis argues that the associate moves leftward out of a complex constituent that contains both it and the floating quantifier. The adjunction analysis considers floating quantifiers to be adverbial adjuncts. This paper investigates Q-float in Arabic and shows that neither of the existing accounts perfectly captures the facts. Adopting Ott's (2012; 2015) analysis of split topics and Q-float in German, the paper proposes that in Arabic, a floating quantifier and its associate are merged together in a particular syntactic position as a set of autonomous phrases; the associate moves out of the set to allow the set to be labeled and integrated in the structure. It will be shown that this labeling analysis captures many of the peculiarities of Q-float, among which are two apparently conflicting facts: the locality restrictions on floating quantifiers and, in many cases, the impossibility for the floating quantifier and the associate to have formed a continuous constituent at any stage of the derivation. The facts and analysis presented contribute to the debate on whether floating quantifiers mark the positions of lower copies of displaced nominals (NP traces in pre-minimalist terms), providing an argument that, at least for Arabic, the answer is 'yes'. It also provides additional support for the labeling framework that emerged from Chomsky (2013) and related work.

Keywords: quantifier float, movement, symmetric merge, labeling, construct state, Arabic

1 Introduction

Quantifier float (Q-float) occurs when a quantifier is separated from its associate nominal, as has been first observed by at least Postal (1974) and discussed in much later work (e.g., Kayne 1975; Fiengo & Lasnik 1976; Sportiche 1988; Shlonsky 1991; Bobaljik 1995; Doetjes 1997; Benmamoun 1999; McCloskey 2000; Bobaljik 2003; Bošković 2004; Fitzpatrick 2006; Spector 2009; Jenks 2013; Lacerda 2016; Zyman 2018). The example in (1b) is representative:

(1)   Zyman (2018: 2, (1))
         a.   All the walruses are painting murals.
         b.   The walruses are all painting murals.

Different accounts were offered to explain the Q-float phenomenon. One account, *the movement/stranding account*, argues that Q-float results from leftward movement of the associate nominal out of a complex constituent that contains both it and the quantifier (e.g., Giusti 1990; Shlonsky 1991; Merchant 1996; Cinque 1999; McCloskey 2000; Zyman 2018). Another account is the *adverbial/adjunct analysis* which simply treats floating quantifiers (FQs) as adverbial elements that semantically modify the predicates they combine with, or that modify their associate nominals (Kayne 1975; Dowty & Brodie 1984; Miyagawa 1989; Baltin 1995; Bobaljik 1995; Torrego 1996; Brisson 1998; Benmamoun 1999; Reed 2010). A more recent analysis, a *hybrid analysis*, argues that in some languages, both stranding and adverbial modification are available (e.g., Fitzpatrick 2006).

This paper investigates Q-float in Modern Standard Arabic (and related languages like Hebrew), and presents empirical facts that argue in favor of a movement analysis such as the one proposed by Ott (2011; 2012; 2015) for split topicalization and Q-float in German. This analysis does not involve stranding of the FQ in the strict sense. Rather, the FQ and its associate are merged together in a particular syntactic position as a set of autonomous phrases, where a member of the set (the associate) moves to allow the set to be labeled and integrated into the structure. This means that although the associate and the quantifier are in a movement dependency, they have not formed a continuous constituent at any stage of the derivation (see section 4 for a definition of *a continuous constituent*). I will show that the analysis captures many of the peculiarities of Q-float in natural languages in general and in Arabic specifically. Also, if the analysis is in the right direction, it

provides support for the labeling framework that emerged from Chomsky (2013) and related work.

I begin by presenting the facts of Q-float in Arabic in section 2, many of which have not been documented before, as far as I know. In section 3, a brief critique of previous accounts will be presented, showing that they do not capture all the facts of Q-float in Arabic. In section 4, I present an analysis of the facts, adopting the assumptions and analysis of split topicalization and Q-float in German proposed by Ott (2011; 2012; 2015) and show that this analysis solves many of the puzzles of Q-float in Arabic. Section 5 is a conclusion.

2 Quantifier float in Arabic: The facts

This section presents a description of Q-float in Arabic. The description includes the nature of elements that may float, the distribution of these elements, and case matching and phi agreement between floating elements and their associates. Unless otherwise indicated, the variety of Arabic to be investigated throughout the paper is Modern Standard Arabic. All the Arabic examples were confirmed with native speakers.

2.1 Which elements may float?

Languages differ in which quantifiers may float. In Standard English[1], for instance, only universal may quantifiers float (*all*, *both*, and *each*), while generalized quantifiers (e.g., *half*) or numerals may not:

(2)   Reed (2010: 1737, (1))

      a.   We are all becoming increasingly aware of climate change.
      b.   The protestors were both yelling/arrested/angry/lawyers.
      c.   The patients with food poisoning had each eaten at Joe's Diner.

(3)   a.   *Children were half playing in the backyard. (cf. *Half of the children were playing in the backyard.*)
      b.   *Children were three playing in the backyard. (cf. *Three children were playing in the backyard.*)

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[1] Q-float in the other varieties of English differ from Q-float in Standard English in many ways (see McCloskey 2000 and Henry 2012 for West Ulster English and Tilleson 2018 for Upper Midwest dialect of American English); thus, unless otherwise indicated, the variety of English to be discussed in the paper is Standard English.

In contrast, a language like Japanese allows numerals to float (e.g., Miya-gawa 1989; Kobuchi-Philip 2007):

(4)   *Japanese* (Kobuchi-Philip 2007: 815, (1c))
        Gakusei-ga   kinoo   go-nin kita.
        student-NOM yesterday 5-CLF came
        'Five (individual) students came yesterday.'

As for Arabic, a range of elements may float, among which are universal quantifiers, such as *kull, jamiiʕ,* and *kaafah,* which are all equivalent to English *all,* and *kila* 'both':

(5)   a.   Kull-u   atˤ-tˤullaab-i   qaddam-u   waraqat-an baħθiyya-tan.
             all-NOM the-students-GEN submit-3M.PL paper-ACC research-ACC
             'All the students submitted a research paper.'
        b.   Atˤ-tˤullaab-u   qaddam-u   kull-u = hum   waraqat-an
             the-students-NOM submit-3M.PL all-NOM = 3M.PL paper-ACC
             baħθiyya-tan.
             research-ACC
             'The students all submitted a research paper.'

(6)   a.   Jamiiʕ-u al-muatˤin-iina   sa-yusharik-uuna   fi al-intixabaat-i.
             all-NOM the-citizen-3M.PL.GEN FUT-participate-3M.PL in the-elections-GEN
             'All the citizens will participate in the elections.'
        b.   Al-muatˤin-uuna   sa-yusharik-uuna   fi al-intixabaat-i
             the-citizen-3M.PL.NOM FUT-participate-3M.PL in the-elections-GEN
             jamiiʕ-u = hum.
             all-NOM = 3M.PL
             'The citizens will all participate in the elections.'

(7)   a.   Kaafat-u atˤ-tˤullaab-i   qaraʔ-u   kitaab-an.
             all-NOM the-students-GEN read-3M.PL book-ACC
             'All the students read a book.'
        b.   Atˤ-tˤullaab-u   qaraʔ-u   kitaab-an kaafat-u = hum.
             the-students-NOM read-3M.PL book-ACC all-NOM = 3M.PL
             'The students all read a book.'

(8)   a.   Kila   ad-dawla-tayni   qarrara-taa   ʔan tuʕlin-aa
             both.NOM the-country-3F.DU.GEN decided-3F.DU to   announce-3F.DU
             al-intixabaat-i.
             the-elections-ACC
             'Both countries decided to announce the (beginning of) the
             elections.'

b.   Ad-dawla-taani   qarrara-ta   kila = huma   ʔan
     the-country-3DU.NOM decided-3F.DU both.NOM = 3F.DU to
     tuʕlin-aa   al-intixabaat-i.
     announce-3F.DU the-elections-ACC
     'The countries both decided to announce (the beginning of) the
     elections.'

Additionally, generalized quantifiers like *baʕdˤ* 'some' and *aħad* 'one' may
float:

(9)   a.   Baʕdˤ-u   al-mushaarik-iina   fi musabaqat-i   al-kitaabat-i
            some-NOM the-participants-3M.PL.GEN in competition-GEN the-writing-GEN
            atˤfaal-un.
            children-NOM
            'Some of the participants in the writing competition were chil-
            dren.'
       b.   Al-mushaarik-uuna   fi musabaqat-i   al-kitaabat-i
            the-participant-3M.PL.NOM in competition-GEN the-writing-GEN
            baʕdˤ-u = hum   atˤfaal-un.
            some-NOM = 3M.PL children-NOM
            'The participants in the writing competition, some of them
            were children.'

(10)   a.   Aħad-u   at-tamaaθiil-i   suriq-a   mina al-mutħaf-i.
             one-NOM the-statues-GEN steal.PASS.PST-3M.SG from the-museum-GEN
             'One of the statues was stolen from the museum.'
        b.   At-tamaaθiil-u   suriq-a   aħad-u = ha   mina
             the-statues-NOM steal.PASS.PST-3M.SG one-NOM = 3F.PL from
             al-mutħaf-i.
             the-museum-GEN
             'The statues, one of them was stolen from the museum.'[2]

Other elements that may float are numerals, a fact that has not been docu-
mented before, as far as I know:

(11)   a.   ʔarbaʕat-u al-mudarris-iina   ʔalqa-u   muħaadarat-an.
             four-NOM the-teacher-3M.PL.GEN gave-3M.PL lecture-ACC
             'Four teachers gave a lecture.'

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[2] Note that the verb agrees with the postverbal phrase; the preverbal phrase is a topic.

b. Al-mudarris-uuna   ʔalqa-u   ʔarbaʕat-u=hum muħaadarat-an.
the-teacher-3M.PL.NOM gave-3M.PL four-NOM=3M.PL lecture-ACC
'The teachers, four of them gave a lecture.'

(12) a. θalaaθat-u al-laaʕib-iina   usˤiib-u   fi-l-malʕab-i.
three-NOM the-player-M.PL.GEN injure.PASS.PST-3M.PL in-the-field-GEN
'Three players were injured in the field.'

b. Al-laaʕib-uuna   usˤiib-u   θalaaθat-u=hum
the-player-M.PL.NOM injure.PASS.PST-3M.PL three-NOM=3M.PL
fi-l-malʕab-i.
in-the-field-GEN
'The players, three of them were injured in the field.'

Thus, a range of elements can float in Arabic: universal quantifiers, generalized quantifiers, and numerals. As will be argued in section 4, what these elements share is that they hold an argument-predicate relationship to their associates (Ott 2015).

2.2 Distribution of floating elements

Generally, Arabic FQs appear where nominals may appear (NP trace positions in pre-minimalist terms), such as the subject, direct object, indirect object (or object in double accusative constructions), and prepositional complement positions. We have seen numerous examples of FQs occurring in subject position above. Examples of the other positions follow:

(13) *Direct object*
a. Qaraʔ-a   ʕali-un jamiiʕ-a al-kutub-i   fi-sˤ-sˤayf-i.
read-3M.SG Ali-NOM all-ACC the-books-GEN in-the-summer-GEN
'Ali read all the books in the summer.'

b. Qaraʔ-a   ʕali-un al-kutub-a   jamiiʕ-a=ha fi-sˤ-sˤayf-i.
read-3M.SG Ali-NOM the-books-ACC all-ACC=3F.PL in-the-summer-GEN
'Ali read the books all in the summer.'

(14) *Object in a double accusative construction*
a. Darras-a   al-muʕallim-u jamiiʕ-a atˤ-tˤullaab-i   al-qasˤaʔid-a.
taught-3M.SG the-teacher-NOM all-ACC the-students-GEN the-poems-ACC
'The teacher taught the poems to all the students.'

 b. Darras-a al-muʕallim-u atˤ-tˤullaab-a jamiiʕ-a = hum
   taught-3M.SG the-teacher-NOM the-students-ACC all-ACC = 3M.PL
   al-qasˤaʔid-a.
   the-poem-ACC
   'The teacher taught the students all the poems.'[3]

(15) *Prepositional complement*
 a. ʔsˤbaħ-a al-internet-tu mutaaħ-an li-kull-i al-manaazil-i
   became-3M.SG the-internet-NOM available-ACC to-all-GEN the-houses-GEN
   fi ʕamman-a.
   in Amman-GEN
   'The internet has become available to all the houses in Amman.'

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[3] A reviewer asks about the floating possibilities in examples with two quantifiers, like (ia). As shown in (ib-d), there are three possibilities of floating in such examples.

(i) a. Al-muʕallim-u darras-a kull-a atˤ-tˤullaab-i kull-a
   the-teacher-NOM taught-3M.SG all-ACC the-students-GEN all-ACC
   al-qasˤaʔid-i.
   the-poems-GEN
   'The teacher taught all the students all the poems.'

 b. *One instance of floating*
   Al-muʕallim-u darras-a atˤ-tˤullaab-a kull-a = hum kull-a
   the-teacher-NOM taught-3M.SG the-students-ACC all-ACC = 3M.PL all-ACC
   al-qasˤaʔid-i.
   the-poems-GEN
   'The teacher taught the students all all the poems.'

 c. *One instance of floating*
   Al-muʕallim-u darras-a kull-a atˤ-tˤullaab-i al-qasˤaʔid-a
   the-teacher-NOM taught-3M.SG all-ACC the-students-GEN the-poems-ACC
   kull-a = ha.
   all-ACC = 3F.PL
   'The teacher taught all the students all of the poems.'

 d. *Two instances of floating*
   Al-muʕallim-u darras-a atˤ-tˤullaab-a kull-a = hum
   the-teacher-NOM taught-3M.SG the-students-ACC all-ACC = 3M.PL
   al-qasˤaʔid-a kull-a = ha.
   the-poems-ACC all-ACC = 3F.PL
   'The teacher taught the students all all of the poems.'

b. ʔsˤbaħ-a   al-internet-tu   mutaaħ-an   li-l-manaazil-i
    became-3M.SG the-internet-NOM available-ACC to-the-houses-GEN
    fi ʕamman-a   kull-i = ha.
    in Amman-GEN all-GEN = 3F.PL
    'The internet has become available to all the houses in Am-
    man.'

In addition, Arabic FQs occur in the complement position of unaccusative and passive verbs (16) (Miyagawa 1989 shows that Japanese allows floating numerals in these positions, as well):[4]

(16) a. Atˤ-tˤullaab-u   wasˤal-u   kull-u-hum.
          the-students-NOM arrive-3M.PL all-NOM = 3M.PL
          'All the students arrived.'
      b. Atˤ-tˤullaab-u   iʕtuqil-u   kull-u-hum.
          the-students-NOM arrest.PASS.PST-3M.PL all-NOM-3M.PL
          'All the students were arrested.'
      c. Salma ta-krahu   atˤ-tˤullaab-a   kull-a-hum.
          Salma 3F.SG-hate the-students-ACC all-ACC-3M.PL
          'Salma hates all the students.'

In contrast, FQs are banned in these positions in some languages like English and French (Sportiche 1988; Authier 1991; Bobaljik 1995; McCloskey 2000; Bošković 2004, and others):

(17) Bošković (2004: 682, (3))

      a. *The students arrived all.
      b. *The students were arrested all.
      c. *Mary hates the students all.

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[4] One might ask how we can be sure that these quantifiers have been stranded in a direct object position, given that they could be in a higher position if the verb has been raised. Other examples show that FQs may appear in the same position even when the main verb cannot have moved (to T, assuming that in Arabic the highest verb must move to T). In (i), the auxiliary *kaan* is assumed to occupy T, so it is impossible for the verb to have moved over the FQ to T:

(i)   Atˤ-tˤullaab-u   kaan-u   qad iʕtuqilu   kull-u-hum.
       the-students-NOM was-3M.PL PRF arrest.PASS.3M.PL all-NOM-3M.PL
       'The students had all been arrested.'

Furthermore, Arabic FQs appear sentence finally.[5] This is not possible in English and French, for instance, which ban FQs in this position, and allow them only if followed by PP adjuncts or secondary predicates (e.g., Fiengo & Lasnik 1976; Maling 1976; Bobaljik 1995):

(18)   Ɂali-un   wa Salim-un   wa SaʕIid-un daxal-u   al-maqha kull-u=hum.
        Ali-NOM and Salim-NOM and Said-NOM enter-3M.PL the-café   all-NOM=3M.PL
        'Ali, Salim, and Said all entered the café.'

(19)   Bobaljik (1995: 231,(32))
        a. Larry, Sally and Darryl came into the café *all.
        b. Larry, Sally and Darryl came into the café all [at the same time].
        c. Larry, Sally and Darryl came into the café all [very tired].

Additionally, Arabic differs from English (20) (and French) in that Arabic FQs may associate with elements in $\bar{A}$-positions (21)–(22) (see McCloskey 2000 who shows that West Ulster English allows FQs to associate with elements in $\bar{A}$-positions)[6]:

(20)   Fitzpatrick (2006: 23, (14))
        *What did John all buy? (=What all did John buy?)

(21)   An-niqaatʕ-a   al-ħuduudiyya-ta maʕa al-maksiik-i   zaar-a
        the-points-ACC the-border-ACC   with the-Mexico-GEN visited-3M.SG
        ar-raɁiis-u   baʕdʕ-a=ha   yawma aliθnayyni.
        the-president-NOM some-ACC=3F.PL day   Monday
        'The Mexican border checkpoints, the president visited some of on Monday.'

(22)   Ɂayy-a   kutub-in qaraɁ-a   ʕali-un jamiiʕ-a=ha?
        which-ACC books-GEN read-3M.SG Ali-NOM all-ACC=3F.PL
        'Which books did Ali read all of?'

That Arabic FQs are not restricted in distribution and that they may associate with elements in A- and $\bar{A}$- positions make the phenomenon more like

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[5] One might wonder whether the FQs occurring sentence-finally can be analyzed as afterthoughts. This is unlikely, however, because all the sentence-final FQs are prosodically integrated into the clause.

[6] Note that in Standard English, *all* can associate with a nominal in an $\bar{A}$-position as long as *of* is present:

(i)   What did John buy all of?

movement. As will be shown in section 4, these facts, among others, argue in favor of a movement dependency between a FQ and its associate.

2.3   *Phi agreement and case matching*

Arabic FQs must agree with their associates in all phi features (Shlonsky 1991; Benmamoun 1999). This agreement takes the form of a clitic appearing on the FQ (Shlonsky 1991), as can be seen in all of the examples above, like

(23)   Atˤ-tˤullaab-u   qaddam-u   kull-u = hum   waraqat-an baħθiyya-tan.
        the-students-NOM submit-3M.PL all-NOM = 3M.PL paper-ACC   research-ACC
        'The students all submitted a research paper.'

Note that the sentence is ungrammatical without the clitic:

(24)   *Atˤ-tˤullaab-u   qaddam-u   kull-u   waraqat-an baħθiyya-tan.
        the-students-NOM submit-3M.PL all-NOM paper-ACC   research-ACC
        ('The students all submitted a research paper.')

In addition, Arabic FQs must agree with their associate phrases in case (Shlonsky 1991, Benmamoun 1999). In (5b), *kull* and *atˤ-tˤullaab-u* have a matching case, namely NOMINATIVE; in (25a), both have ACCUSATIVE case; in (25b), both are assigned GENITIVE case. Compare these examples to those that do not involve Q-float, like (5a) above. In those examples, the associate phrase invariably gets GENITIVE case.

(25)   a.   RaʔAy-tu atˤ-tˤullaab-a   albaariħata kull-a = hum.
             saw-1SG   the-students-ACC yesterday   all-ACC = 3M.PL
             'I saw all the students yesterday.'
      b.   Minaħ-u   atˤ-tˤullaab-i   aθ-θalaaθat-i   al-mutamayyiz-iina
             scholarships-NOM the-students-GEN the-three-GEN the-distinguished-3M.PL.GEN
             kull-i-him   ʔuuqif-at.
             all-GEN = 3M.PL suspend.PASS.PST-3F.PL
             'The scholarships of all of the three distinguished students were suspended.'

2.4   *Locality restrictions*

Baltin (1978), Kayne (1981), Bobaljik (2003), and others note that the dependency between a FQ and its associate is similar to the one that holds

between an anaphor and its antecedent. First, a FQ must be in the local domain of its associate NP:

(26)   Baltin (1978: 26)
         *There (had) all hung on the mantelpiece portraits by Picasso.

(27)   Kayne (1981: 196)
         *My friends_i think that I have all_i left.

This is the case in Arabic. Sentence (28) is ungrammatical under the reading in which 'all' associates with 'students':

(28)   *Atˤ-tˤullaab-u   iʕtaqad-u   ʔanna al-muʕallima-ta   lann
         the-students-NOM thought-3M.PL COMP the-teacher.F.SG-ACC NEG
         tadˤdaʕ-a   waajib-an   ilikitroniyy-an jadiid-an kull-a = hum
         put.IPFV-3F.SG assignment-ACC electronic-ACC new-ACC all-NOM = 3M.PL
         alʔarbiʕaʔa.
         Wednesday
         ('*The students thought that the teacher will not post a new assign-
         ment online all on Wednesday.') (*all* associates with *students*)

Second, FQs must be c-commanded by their associates. Again, the same holds for Arabic FQs (Benmamoun 1999):

(29)   Fitzpatrick (2006: 69, (87))
         *[A friend of [the students]] has all arrived.
         (Int.: 'A friend of all of the students has arrived.')

(30)   *[ʔism-u   [al-kuttaab-i]]   kaana kull-u = him   mafquud-an.
         [name-NOM [the-authors-GEN]] was   all-GEN = 3M.PL missing-ACC
         ('*The name of the authors was all missing.')
         (Int.: 'The name of all of the authors was missing.')

Third, a FQ and its associate cannot be separated by the boundary of a movement island. All the examples below are ungrammatical because the displaced nominals associate with FQs that appear inside movement islands (but note also that FQs vary in their sensitivity to islands. For instance, *jamiiʕ* is less sensitive to islands than *kull*):

(31)   *Wh-Island Constraint*
         *ʔayy-a   ʔaflaam-in saʔal-a   ʕali-un limaaθaa Salma
          which-ACC movies-GEN ask-3M.SG Ali-NOM why   Salma.NOM

lamm t-uħibba   nisˤf-a=ha?
NEG 3F.SG-liked half-ACC=3F.PL
('*Which movies did Ali ask why Salma did not like half of?')

(32)   *Complex* NP *Constraint*
       *Al-axbaar-a   al-hamma-ta,   ʕali-un sˤaddaq-a   iddiʕaaʔ-a
        the-news-ACC the-important-ACC, Ali-NOM believed-3M.SG claim-ACC
       Salma ʔanna Samiir-an   sarrab-a   kull-a=ha?
       Salma COMP Samiir-ACC leaked-3M.SG all-ACC=3F.PL
       ('*The important news, Ali believed Salma's claim that Samiir leaked
       all of.')

(33)   *Adjunct Island Constraint*
       *ʔayy-a   kutub-in katab-at   Salma risaalat-a=ha
        which-ACC books-GEN wrote-3F.SG Salma dissertation-ACC=3F.PL
       qabla ʔan   taqraʔ-a   kull-a=ha?
       before COMP read-3F.SG all-ACC=3F.PL
       ('*Which books had Salma written her (Ph.D.) dissertation before
       she read all of?')

Benmamoun (1999), however, claims that FQs may appear inside move-
ment islands as in (34) from Moroccan Arabic:

(34)   *Moroccan Arabic* (Benmamoun 1999: 628, (16))
       Hadu lə-wlad_i   lli mš-at   [_island qbəl ma-y-ži-w
       these the-children that leave.PST-3FS   before NEG-3-come-P
       kull-hum_i]
       all-them
       'These are the children that she had left before they all came.'[7]

I believe, nonetheless, that the FQ does not violate the island constraint in
this example. It is more likely that the FQ associates with a null pronomi-
nal subject within the adjunct clause, which is in turn co-indexed with 'the
children' in the higher clause. This is supported by the fact that a FQ asso-
ciating with a subject does not require an overt subject (35a), but the one
associating with an object does (35b).

(35)   a. Jaaʔ-u   ʔila al-ħafl-i   kull-u-hum.
          came-3M.PL to   the-party-GEN all-NOM=3M.PL
          'They all came to the party.'

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[7] The idomatic translation is mine. The one provided by Benmamoun is incorrect (he trans-
lates the example as 'These are the children that she left before meeting them all.')

b. *Qaabal-tu fi-l-ħafl-i   kull-a = hum.
    met-1SG   in-the-party-GEN all-ACC = 3M.PL
    ('I met them all at the party.')

In order for a FQ to associate with a nominal in the object position, an overt associate is required, which can take the form of a pronominal clitic:

(36)   Qaabal-tu = hum fi-l-ħafl-i   kull-a = hum.
        met-1SG = 3M.PL in-the-party-GEN all-ACC = 3M.PL
        'I met them all at the party.'

In the same way, a FQ associating with an object may appear inside an island only when a clitic appears in the object position (note that in the examples in (31)-(33), the floating quantifiers are object-oriented; thus, they cannot associate with a local null pronominal):

(37)   *Haaʔulaaʔi hum al-ʔawlaad-u   allaðiin saafar-a   Sami
        these   they the-boys-NOM that   traveled-3M.SG Sami.NOM
        qabla ʔan   y-ara   kull-a = hum
        before COMP 3M.SG-see all-ACC = 3M.PL
        ('*These are the boys whom Sami had traveled before he saw all of.')

(38)   Haaʔulaaʔi hum al-ʔawlaad-u   allaðiin saafar-a   Sami
        these   they the-boys-NOM that   travel-3M.SG Sami.NOM
        qabla ʔan   y-ara = hum   kull-a = hum
        before COMP 3M.SG-saw = 3M.PL all-ACC = 3M.PL

There are two possible explanations of the contrast between (37) and (38). The first is that the clitic ameliorates the island violation (Aoun & Benmamoun 1998 refer to this as the *resumptive strategy*). The second is that the FQ associates with the pronominal clitic which is in turn co-indexed with the relevant nominal, meaning that there is no island violation. Either of these possibilities leads to the same conclusion: FQs cannot violate islands.

However, as pointed out by an anonymous reviewer, there might be other conditions. In some languages like German, Q-float occurs with constructions that generally do not permit subextraction. For instance, Ott (2015) shows that German dative objects can be split by Q-float although subextraction from dative objects is impossible:

(39)   *German* (Ott 2015: 159, (5); 190, (85); brackets in (b) mine)

    a. *Worüber$_i$ wurde schon [$_{DP}$ mehreren Büchern t_i] ein
        about what was already [several books.DAT] a
        Preis verliehen?
        prize awarded

    b. [Den Freunden von Benni]   hat Caro beiden   einen Kuchen
        [the friends of Benni].DAT has Caro both.DAT a   cake
        gebacken.
        baked

This seems to be the case in Arabic as well. Although subextraction from indirect objects (in double accusative constructions) is ungrammatical (40), a topicalized phrase can associate with a FQ in indirect object position (41):

(40)   *Maða$_i$ aʕtˤ-at   Muna   [atˤ-tˤullaab-a t_i] kutub-an?
        what$_i$ gave-3F.SG Muna.NOM [the-students-ACC t_i] books-ACC
        ('*[Of What]$_i$ did Muna give [students t_i] (some) books?)
        (cf. *Muna gave students of physics (some) books.*)

(41)   Atˤ-tˤullaab-a   aʕtˤ-at   Muna   nisˤf-a = hum kutub-an.
        the-students-ACC gave-3F.SG Muna.NOM half-ACC-3M.PL books-ACC
        '[The students]$_i$, Muna gave half of t_i (some) books.'

The above facts provide evidence against analyzing Q-float as a case of subextraction as claimed by proponents of the stranding analysis (see section 3).

2.5   Interim summary

To summarize, in this section, I have presented a detailed description of Q-float in Arabic. I have shown that a range of elements can float. Also, unlike FQs in languages like English and French, Arabic FQs may appear where nominals normally appear (thematic positions or NP-trace positions in traditional terms), and they may associate with elements in A- and $\bar{A}$-positions. FQs are also subject to locality restrictions as in many languages.

3   Remarks on previous accounts

Before presenting my analysis of Q-float in Arabic, a few remarks on previous accounts are in order. Two accounts have been proposed in the litera-

ture: the movement/stranding analysis and the adverbial/adjunct analysis. Proponents of the stranding analysis claim that Q-float results from leftward movement of the associate nominal away from the quantifier (Giusti 1990; Shlonsky 1991; Merchant 1996; Cinque 1999; McCloskey 2000; Zyman 2018, among others).[8] One major version of this analysis in the literature on Semitic languages like Arabic and Hebrew is Shlonsky (1991) in which it is proposed that Hebrew *kol* 'all' (and its Arabic equivalent) is a functional head that selects a DP complement. According to Shlonsky, building on Sportiche's (1988) movement analysis, Q-float is derived by moving a DP out of a QP, resulting in the quantifier being stranded, as illustrated in (43) for (42):

(42)   *Hebrew* (Shlonsky 1991: 170, (18a))
        Ha-yeladim medabrim sinit   kul-am.
        the-children speak   Chinese all-3M.PL
        'The children all speak Chinese.'

(43)   Shlonsky (1991: 169, (17); adapted)

     [_TP [_DP Ha-yeladim] …[_QP *t* [_Q' [_Q kul-am] *t*]]]

Here the quantifier *kol* 'all' floats as a result of leftward movement of *ha-yeladim* 'the children' through the specifier of QP. *Ha-yeladim* and *kol* enter into spec-head agreement, which is manifested by the agreement clitic -*am*. (In Shlonsky's analysis, VP-internal subjects are projected to the right. Presumably, in his analysis, all the other specifiers should project to the left.)

The stranding analysis has received much criticism. First, it does not capture the cases in which FQs may not appear in NP trace positions, as with passive and unaccusative verbs (e.g., (17)).[9] Second, the stranding analysis does not explain why in some languages FQs cannot associate with Ā-

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[8] Earlier analyses proposed a rightward movement of FQs (e.g., Kayne 1975). I will not discuss this possibility here.

[9] Bošković (2004) addresses this argument and argues that quantifiers may not float in theta positions because this violates the ban on adjunction to argument positions (Chomsky 1986), assuming that a FQ is adjoined to the associate nominal (Sportiche 1988; Benmamoun 1999). Rather, FQs are merged countercyclically. Assuming that FQs are adjoined to DP is problematic from a semantic perspective, however (see Bobaljik 1995 for arguments along these lines). Also, recent literature reveals that countercyclic late merger should not be allowed (see Sportiche 2019 for arguments. See also Bruening & Al Khalaf 2018 for an alternative analysis to countercyclic later merger in terms of left-to-right syntax). What is important for the purposes of the current paper is that Bošković's generalization does not capture the Arabic facts: FQs do appear in theta positions (note that this

positions (e.g., (20)). More particularly, as pointed out by Bobaljik (1995; 2003), Fitzpatrick (2006), and others, one problem for the stranding analysis is accounting for the anaphor-like locality restrictions on FQs in languages like English: a nominal which has undergone A-movement may be the associate to a floating quantifier, while a nominal that has undergone $\bar{A}$-movement may not. As pointed out by Bobaljik (2003), this is hard to explain under the stranding analysis given that well-attested stranding phenomena are not restricted to A-movement. As has been shown in section 2.2, the two criticisms outlined above are inapplicable to Arabic: Arabic allows FQs to appear in the object position of passives and unaccusatives, and allows FQs to associate with nominals occupying $\bar{A}$-positions.

There are other facts that argue strongly against the stranding analysis of Q-float. More particularly, in many cases, it is impossible for the associate and the FQ to have formed a continuous constituent at any stage of the derivation (see section 4 for a definition of *a continuous constituent*), as pointed out by many (e.g., Sportiche 1988; Bobaljik 2003). This is true for Arabic and for languages like English and French:

(44)   Bobaljik (2003: 123, (32); the bracketing in the b-example is mine)
    a.   These children have each (*of) read a different book.
    b.   [QP Each *(of) these children] has read a different book.

(45)   *French* (Doetjes 1997: 201)
    a.   Ces enfants ont chacun lu   un livre différent.
        these children have each   read a   book different
        'These children have each read a different book.'
    b.   Chacun *(de) ces enfants a   lu   un livre différent.
        each   *(of) these children has read a book different
        'Each of these children has read a different book.'

(46)   a.   Atˤ-tˤullaab-u   daxal-u   al-qaaʕa-ta kull-un ħasaba
        the-students-NOM entered-3M.PL the-hall-ACC each-NOM according to
        ʔism-i=hi.
        name-GEN=3M.SG
        'The students entered the hall each according to his name.'[10]

---

is also true of Japanese floating numerals, as shown by Miyagawa 1989; thus, it is not a distributional fact specific to Arabic).

[10] In Arabic, the word *kull* is used as a universal quantifier like *all* in English, and a distributive quantifier like *each*. As can be seen, when it occurs as a distributive adverb, *kull* does not host a clitic.

     b.   Kull-un   *(min) atˁ-tˁullaab-i   daxal-u   al-qaaʕa-ta
          each-NOM *(of)   the-students-GEN entered-3M.PL the-hall-ACC
          ħasaba   ʔism-i = hi.
          according.to name-GEN = 3M.SG
          'Each of the students entered the hall according to his name.'

In each of the pairs above, the non-floating sentence requires a preposition ('of') between the quantifier and the nominal that follows it, a fact that is hard to explain under the stranding analysis.

    Similarly, Arabic FQs may associate with a coordinate phrase. Non-floating versions are grammatical only with a preposition:

(47)   a.   Sally   wa Sarah   wa Suzan   ijtaz-na   kull-u = hunna
              Sally.NOM and Sarah.NOM and Suzan.NOM passed-3F.PL all-NOM = 3F.PL
              al-ixtibaar-a.
              the-test-ACC
              'Sally, Sarah, and Suzan all passed the test.'
    b.   Kull-un *(min) Sally   wa Sarah   wa Suzan   ijtaz-na
              all-NOM *(of)   Sally.GEN and Sarah.GEN and Suzan.GEN passed-3F.PL
              al-ixtibaar-a.
              the-test-ACC
              'Sally, Sarah, and Suzan all passed the test.'

This is the case in English as shown by Bobaljik (2003) (note, however, that even with an intervening preposition, a quantifier cannot precede a coordinate phrase in English):

(48)   Bobaljik (2003: 124, (34))

       a.   Larry, Sally and Darryl have all come into the café.
       b. ?*All (of) Larry, Sally and Darryl have come into the café.

    Moreover, a FQ may associate with a quantified phrase, but a non-floating version is unavailable for this case:

(49)   a.   Some (of the) students might all have left in one car.
       b.   *All (of) some (of the) students might have left in one car.

(50)   a.   Baʕdˁ-u   atˁ-tˁullaab-i   ɣab-u   kull-u = hum
            some-NOM the-students-GEN was.absent-3M.PL all-NOM = 3M.PL
            ʕan   al-imtiħaan-i.
            from the-exam-GEN
            'Some students were all absent from the exam.'

b. *Kull-u   baʕdˤ-i   atˤ-tˤullaab-i   ɣab-u   ʕan
   all-NOM some-GEN the-students-GEN was.absent-3M.PL from
   al-imtiħaan-i.
   the-exam-GEN

Furthermore, and as shown in section 2.3, the best indication of the fact that a floating quantifier cannot have formed a continuous constituent with the associate is the fact that in floating constructions, the floating element and its associate must have matching case, whereas in non-floating constructions the associate invariably gets GENITIVE case. This indicates that floating and non-floating quantification are not derivational variants.[11]

All of the above facts lead to the conclusion that the stranding analysis does not explain all the cases of Q-float in Arabic. However, a number of facts suggest that there is a movement dependency between a FQ and its associate: a FQ may associate with A- or $\bar{A}$-positions (21)-(22) and is sensitive to islands (31)-(33). In addition, a FQ shows reconstruction effects for the binding conditions:

(51)   *Binding Condition C*
         sˤuwar-an   *li-ʕali-in$_i$/nafsihi$_i$ lamm y-ara   huwa$_i$ nisˤf-a = ha.
         pictures.F-ACC of-Ali-GEN/himself NEG   3M.SG-see he   half-ACC = 3F.PL
         'Pictures of *Ali$_i$/himself$_i$, he$_i$ didn't see half of.'

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[11] Further evidence that floating and non-floating constructions are not syntactically related comes from semantic scope. Dowty & Brodie (1984), McCawley (1988), Deprez (1994), Bobaljik (2003), Payne (2011), and others note that the scope of FQs is restricted to their surface position, whereas the quantifiers in non-floating constructions may undergo scope changing operations; thus, in (ib), the universal quantifier cannot outscope modality.

(i)   Bobaljik (2003: 130, (46))
           a.   All the contestants could have won. $\Diamond > \forall,\ \forall > \Diamond$
           b.   The contestants could have all won. $\Diamond > \forall,\ *\forall > \Diamond$

Note, however, that there is a class of exceptions already noted by Dowty & Brodie (1984) and discussed in Bobaljik (2003): a floating quantifier can take scope under a following negation if negation immediately follows a finite auxiliary:

(ii)   Bobaljik (2003: 130, (47))
           The contestants all didn't win. $\forall > not,\ not > \forall$

If floating constructions were derived from non-floating ones, it would be hard to explain why the two constructions exhibit different scopal interactions.

(52) *Binding Condition B*
       Kitaab-ayni   ʕan   -*hu$_i$/nafsihi huwa$_i$ lamm ya-qraʔ   kilay = hima.
       book-DU.ACC about -him/himself he$_i$ NEG   3M.SG-read both.ACC = 3M.DU
       'Books about *him$_i$/himself$_i$, he$_i$ did not read both of.'

It therefore seems that Q-float cannot result from movement of the associate out of a continuous constituent that includes it and the quantifier. It rather appears that the associate moves out of a projection that dominates both it and the quantifier. In section 4, I will present an analysis I essentially adopt from Ott (2015) which reconciles these apparently conflicting facts.

The adverbial analysis, on the other hand, was proposed as an alternative to the movement analysis. Proponents of the adverbial analysis argue that FQs are adverbial elements that semantically modify the predicates they combine with, or in some versions of the analysis, that modify their associate NPs (Kayne 1975; Dowty & Brodie 1984; Miyagawa 1989; Baltin 1995; Bobaljik 1995; Torrego 1996; Brisson 1998; Benmamoun 1999, among others). The type of argument used to support the adverbial analysis is the same one that rendered the movement analysis problematic: FQs cannot appear in thematic positions of some verbs like passives. As shown in section 2.2, this criticism is mainly based on facts from English and French, and is inapplicable to Arabic.[12]

The conclusion that I reach, then, is that existing accounts of Q-float do not explain the Arabic facts perfectly. The distribution and the nature of the elements that float indicate that FQs cannot have formed continuous constituents with their associates at any stage of the derivation, nor are they projected as adverbial adjuncts.
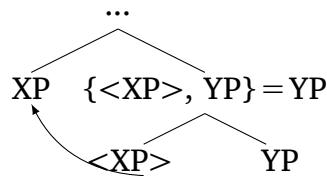
4   Analysis

In this section, adopting Ott's (2011; 2012; 2015) analysis of split topicalization and Q-float in German, I propose that in Arabic, a FQ and its associate are merged together in a particular syntactic position as a symmetric set of autonomous phrases from which the associate must move leftward to allow the set to be labeled and integrated into the structure (Chomsky 2013).

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[12] A third analysis that has been proposed more recently is a hybrid analysis (e.g., Fitzpatrick 2006). This analysis argues that in some languages both stranding and adverbial modification are possible analyses of Q-float. The analysis would explain the cases in which movement is impossible, and would still account for the movement-like properties of Q-float, like the fact that Arabic FQs may associate with both A- and $\bar{A}$-positions.

Ott's analysis rests on a number of assumptions. First, he assumes that a FQ and its associate hold a predicate-argument relation at the semantic level. Second, as argued by Chomsky (2004; 2008; 2007; 2013), the operation *(symmetric) merge* combines two syntactic objects into an unordered set (assuming that linear order is computed in the post-syntax). This set must be labeled in order for the constructed unit to be syntactically and semantically integrated into the surrounding structure. According to Chomsky, the label of the set is identified via a simple algorithm which identifies the head through a specific feature of that head. To put it simply, the label of {A, B} is A if A is a lexical item and B is an XP. A set that results from merging XP with YP is a symmetric set or a *locally unstable* combination for which no lexical item can be identified as a head (Moro 2000; Chomsky 2013). For the derivation to converge, it is crucial for the combination to be labeled. One solution is for one of the members of the set to move out of it via *internal merge* (Moro 2000; Chomsky 2013). The result is that only one phrase remains properly contained within the set, and, as a result, it determines the label of the set.

(53)

$$\ldots$$

$$\text{XP}\quad \{<\text{XP}>, \text{YP}\} = \text{YP}$$

$$<\text{XP}>\qquad \text{YP}$$

To illustrate the analysis for German, consider the following example from Ott (2015):

(54)   *German* (Ott 2015: 194, (96))
        Die Kinder   hat Elisabeth beide   eingeladen.
        the children.ACC has Elisabeth both.ACC invited

In this sentence, the DP 'the children' merges with the QP 'both' together in a symmetric set, {DP, QP}. Since the labeling algorithm cannot detect a unique lexical item that can label the set, movement of DP is forced to allow the set to be labeled. As a result of this movement, QP becomes the only phrase that is properly contained within the set, and consequently the set should be labeled as QP:

(55)   Ott (2015: 194, (97b))
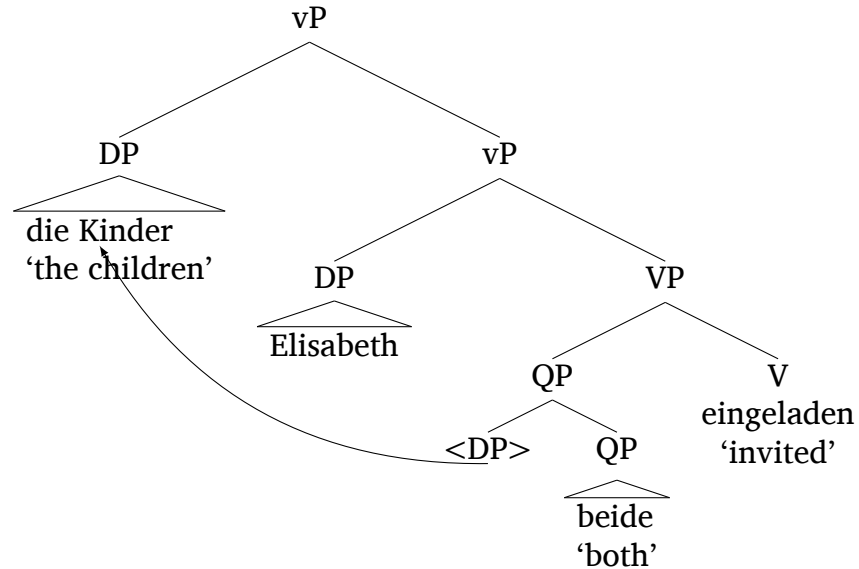
In principle, moving either of QP and DP would asymmetrize the set; how-
ever, according to Ott, it is DP rather than QP that should move for prag-
matic considerations. In particular, fronting DP results in a structure that is
pragmatically felicitous in which the DP acts as a frame setting (in the sense
of Jacobs 2001) with respect to which the proposition that follows it can be
interpreted. This is compatible with the view that syntax is not crash-proof,
and that merge applies freely, but is restricted indirectly by constraints at
the interfaces (e.g., Chomsky 2004).

   Note also that it is crucial in Ott's analysis to treat FQs (and the remnants
of split topicalization) as elliptical nominals, based on the fact that German
allows free NP-ellipsis. This is also the case in Arabic:

(56)   Miʔaat-u   al-mwuatin-iina ʔuxl-u   qabla al-fayadˁaan-i,
         hundreds-NOM the-citizen-GEN evacuate.PASS.PST-3M.PL before the-flood-GEN,
         wa [baʕdˁ-un   e] la yazaalu   ʕaaliq-an
         and [Some-NOM e] remain.IPFV.3M.SG stranded.3M.SG-ACC
         'Hundreds of citizens were evacuated before the flood, and some
         are still stranded.'

Given this, I propose that all the examples of Q-float in Arabic involve
merger of QP with a null nominal in them. In non-floating constructions,
on the other hand, the quantifier is merged with a DP as a lexical item,

giving rise to an asymmetric set that can be labeled as QP. The two merging options are illustrated in (58) for the examples in (57) = (9), repeated below:

(57) a. Baʕdˤ-u   al-mushaarik-iina   fi musabaqat-i   al-kitaabat-i
          some-NOM the-participant-3M.PL.GEN in competition-GEN the-writing-GEN
          atˤfaal-un.
          children-NOM
          'Some of the participants in the writing competition were children.'
      b. Al-mushaarik-uuna   fi musabaqat-i   al-kitaabat-i
          the-participant-3M.PL.NOM in competition-GEN the-writing-GEN
          baʕdˤ-u = hum   atˤfaal-un.
          some-NOM = 3M.PL children-NOM
          'The participants in the writing competition, some of them were children.'

(58) a.

      b.
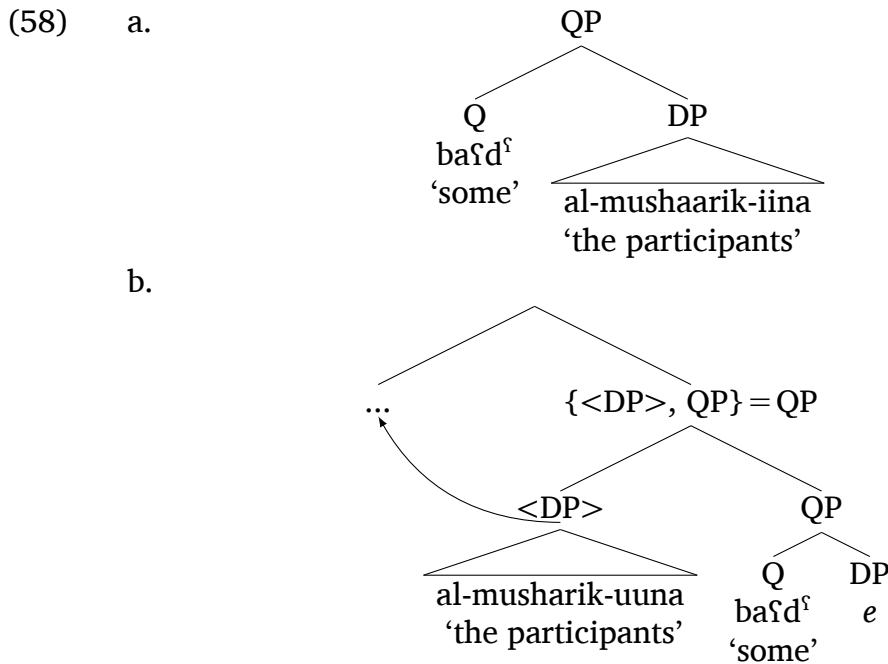
The first merging option in (58a) gives rise to a continuous constituent, while the second in (58b) gives rise to two autonomous phrases. Given the labeling framework outlined above, I propose the following definition of *a continuous constituent*:

(59)   Given two syntactic objects X and Y, the set resulting from merging X and Y (i.e. {X, Y}) is a continuous constituent iff the set is labeled before either of its members is (further) internally merged.

This definition should be accompanied by the assumption that the labeling algorithm computes the labels *before* internal merge of objects from the current constituent applies. It follows, then, that a movement that is forced by labeling breaks the continuity of constituents because, at the point it applies, the set has not been labeled yet. In contrast, a movement that is not forced by labeling, say *wh*-movement of a DP from within a PP = {P, DP}, for instance, does not break the continuity of the PP constituent, because at the point it applies through a phase edge, all the constituents inside that phase have been labeled.

   Now turning to the cases of Q-float in Arabic, consider the example in (5b), reproduced below:

(60)   Atˁ-tˁullaab-u   qaddam-u   kull-u = hum   waraqat-an baħθiyya-tan.
         the-students-NOM submit-3M.PL all-NOM = 3M.PL paper-ACC   research-ACC
         'The students all submitted a research paper.'

The labels of 'the students' and 'all' are DP and QP, respectively. The quantifier 'all' semantically takes 'students' as an argument. The quantifier and its associate combine into a set, {DP, QP}. Because the set is symmetric, the labeling algorithm cannot identify a label for it. Without a label, the set cannot be integrated syntactically and semantically into the structure, and consequently the derivation will crash. One way to break the symmetry is for one of the members of the set to move, which is the DP ('students') for the pragmatic reasons explained briefly above. The label of the set will then be the label of the phrase that is properly contained in the set, which is the label of the quantifier 'all' (QP). Assuming that derivations proceed in phases, the moved phrase moves via the edge of the vP phase, where it may undergo further movements:

(61)
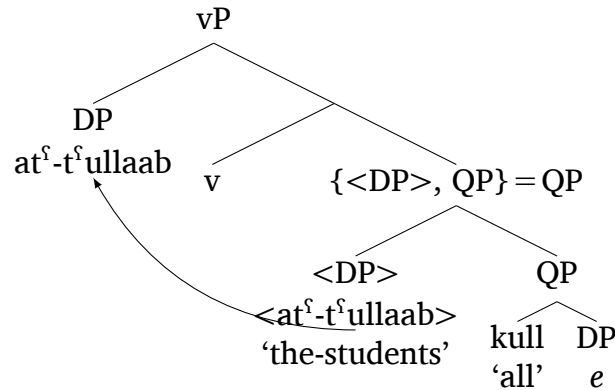
Case matching between the quantifier and the associate nominal follows under the analysis presented. Any head proping for case features values its features via Agree with all members of its goal, which guarantees that each member is marked with the same case (Ott 2015). I suggest that the clitic appearing on the FQ is a result of matching between the nominals prior to movement. It should be noted that the shared phi and case features between the members of the set {DP, QP} are insufficient to label the set via the mechanism of labeling by feature-sharing (e.g., Chomsky 2013). Following Chomsky (2013), mere feature matching is not sufficient to render a set labelable; only agreement is, which is not what see here.
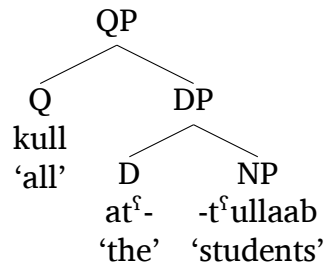
Also, the analysis accommodates the non-floating cases. These are the cases in which QP is not elliptical. Consider the example below again:

(62)   Kull-u   atˤ-tˤullaab-i   qaddam-u   waraqat-an baħθiyya-tan.
        all-NOM the-students-GEN submit-3M.PL paper-ACC research-ACC
        'All students submitted a research paper.'

Here the quantifier and the nominal following it are not merged together in their base position as a symmetric set. Rather, they form a complex phrase (i.e., construct state) in which the quantifier selects the nominal phrase as a complement. 'All students' is merged as an asymmetric set of {Q, DP}. I adopt the structure proposed by Shlonsky (2004) for construct states headed by a Q, as illustrated below (details left out):

(63)

```
                              QP
                            /    \
                          Q       DP
                         kull    /  \
                         ‘all’  D    NP
                              atˁ-  -tˁullaab
                              ‘the’ ‘students’
```

The case mismatch between the quantifier and the DP follows from the fact that the quantifier values its case features via Agree with an outside case probe, being the head of the projection, while the DP values its case features within the construct state nominal. The mechanism through which case is valued inside the construct is not crucial, but I assume, following the assumptions in Benmamoun (1999) and Bošković (2004), that the DP is assigned GENITIVE case via Agree with the quantifier *kull*.

The analysis also explains the impossibility for examples like (64) = (47a) to have a non-floating version:

(64) Sally   wa Sarah   wa Suzan   ijtaz-na   kull-u = hunna
      Sally.NOM and Sarah.NOM and Suzan.NOM passed-3F.PL all-NOM = 3F.PL
      al-ixtibaar-a.
      the-test-ACC
      ‘Sally, Sarah, and Suzan all passed the test.’

This sentence is derived by merging the coordinate structure and the quantifier together in a set of {&P, QP} (I follow Collins 1988, Johannessen 1998, and others in assuming that coordinate structures have the label &P. But see for instance Zhang 2010, Al Khalaf 2015; 2017, and Bruening & Al Khalaf 2019 for more recent perspectives on coordinate structure). Note that in this example, the QP is an elliptical nominal. The coordinate structure moves out of the set and allows the set to be labeled as QP. Consider the non-floating version in (65) = (47b) again, on the other hand:

(65) Kull-u (*min) Sally   wa Sarah   wa Suzan   ijtaz-na
      all-NOM (*of) Sally.GEN and Sarah.GEN and Suzan.GEN passed-3F.PL
      al-ixtibaar-a.
      the-test-ACC
      ‘Sally, Sarah, and Suzan all passed the test.’

The ungrammaticality of the sentence (without the preposition) can be explained as follows. The coordinate structure and the quantifier are merged

together in subject position as a symmetric set. Again, the QP is an elliptical nominal. Neither of the members of the set moves, and the combination fails to be labeled as a result, causing the derivation to crash. Note, however, that the sentence becomes grammatical with the preposition 'of'. The grammaticality follows if the quantifier merges with the PP as a lexical item (i.e. a Q), forming an asymmetric set of {Q, PP}, as shown above for non-floating constructions. This clearly does not pose any issues to the labeling algorithm. Another way to explain the unacceptability of Q &P sequence and the acceptability of Q PP sequence is to posit selectional restrictions on 'all', banning it from co-occurring with &P and allowing it to occur with PPs headed by *of*. This would capture the facts, but it remains an ad hoc stipulation that needs to be explained.

Moreover, the analysis captures the island sensitivity of FQs. The associate moves from a projection that dominates both it and the floating element. It also follows that this symmetry-breaking movement should in principle create A- and $\overline{A}$-chains, accounting for the fact that associates can occupy A and $\overline{A}$- positions in Arabic (and languages like West Ulster English).

It should be noted that the analysis presented predicts that Arabic FQs may appear in thematic positions or where nominals are externally merged (this does not mean the FQs cannot appear in non-thematic positions. That depends on whether an unlabeled set can move to a non-thematic position prior to asymmetrization). As was shown in section 2.2, Arabic FQs appear in the positions that are known to be NP trace positions, including the complement position of passives and unaccusatives where FQs are banned in other languages. One class of exceptions to this generalization, however, are the cases in which FQs appear sentence-finally (66) = (18):

(66)   ?ali-un   wa Salim-un   wa Saʕiid-un daxal-u   al-maqha kull-u = hum.
         Ali-NOM and Salim-NOM and Said-NOM enter-3M.PL the-café   all-NOM = 3M.PL
         'Ali, Salim, and Said all entered the café.'

As indicated earlier, English (and French) FQs, in contrast, are banned in these positions, and are allowed only if followed by a PP or a secondary predicate (19). I suggest that the contrast between English-type languages and Arabic is due to the fact that in Arabic, word order is freer than the word order in those languages. For instance, in Arabic, the subject may precede the verb or follow it, and may even be separated from the verb by VP adjuncts when it follows the verb:

(67)   a.   Daxal-a   al-maqha kull-u   atˤ-tˤullaab-i.
              entered-3M.SG the-café   all-NOM the-students-GEN
              'All the students entered the café.'
        b.   Atˤ-tˤullaab-u   daxal-u   al-maqha kull-u = hum.
              the-students-NOM entered-3M.PL the-café   all-NOM = 3M.PL
              'The students all entered the café.'

(68)   a.   Daxal-a   al-maqha kull-u   atˤ-tˤullaab-i   fi ðat-i
              entered-3M.SG the-café   all-NOM the-students-GEN at same-GEN
              al-waqt-i.
              the-time-GEN
              'All the students entered the café at the same time.'
        b.   Atˤ-tˤullaab-u   daxal-u   al-maqha kull-u-hum   fi
              the-students-NOM entered-3M.PL the-café   all-NOM = 3M.PL at
              ðat-i   al-waqt-i.
              same-GEN the-time-GEN
              'The students entered the café all at the same time.'

One could simply say that in these examples, the subject is merged in spec-
VP as a symmetric set from which the associate moves; the verb moves
resulting in the FQ appearing sentence-finally or near-sentence-finally. This
would capture the passive and unaccusative examples perfectly. However,
it predicts that with transitive verbs FQs should not appear sentence-finally
after the object, contrary to fact:

(69)   Atˤ-tˤalibaat-u   qaraʔ-na   ar-riwaya-ta   kull-u = hunna.
        the-students-NOM read-3F.PL the-novel-ACC all-NOM = 3F.PL
        'The students all read the novel.'

Thus, it seems to be more plausible to say that the peculiarity of the dis-
tribution of FQs in Arabic arises from the fact that subjects may appear at
the left or right edge of VP (cf. Shlonsky 1991 who argues that in Hebrew
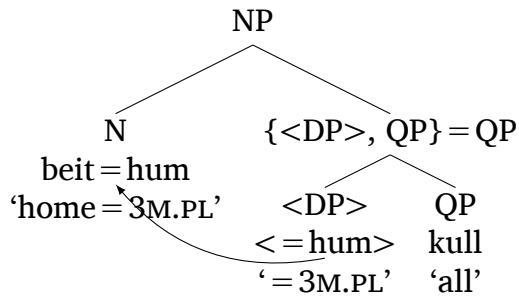subjects can be right-peripheral).

    Before concluding this section, I should point out a potential problem
illustrated by the examples below.

(70)   beit-u = hum   kull-u = hum
        home-NOM = 3M.PL all-NOM = 3M.PL
        'the house of all of them'

(71)   muʕtaqad-u = hunna kaafat-u = hunna
        belief-NOM = 3F.PL   all-NOM = 3F.PL
        'the belief of all of them'

In these examples, the FQ associates with a preceding pronominal possessor within a construct state nominal, which may be a problem for the analysis given that this pronominal clitic is not obviously a DP and consequently has not necessarily moved from a symmetric set that contains both it and the quantifier (note that the same problem arises in the cases in which a FQ associates with an object pronominal clitic as in (35b)). The current analysis would explain the floating pattern in (70) as follows. Following Shlonsky (2004), nominal construct states have the structure of NP in which N selects DP/QP as a complement. In (70), the head *beit-* merges with a symmetric set of {QP, DP}. In order for the set to be labeled, the associate DP (-*hum*) must move. Here it moves and cliticizes on the N *beit-*. The clitic appearing on Q is a result of agreement.

(72)

                                        NP
                              ╱   ╲
                    N   {<DP>, QP} = QP
                beit = hum   ╱   ╲
              'home = 3M.PL'   <DP>   QP
                                      < = hum>   kull
                                      ' = 3M.PL'   'all'

This is how the analysis would capture these cases, but there remains the question whether analyzing pronominal clitics as DPs is a desirable option. I will leave this issue open for future research, however.

5   Conclusion

In this paper, I presented a detailed description of the syntax of Q-float in Arabic. The facts suggest a movement dependency between a FQ and its associate, but also show that it is impossible for them to have formed a continuous constituent at any stage of the derivation. To account for these two conflicting facts, following Ott (2012; 2015), I proposed that Arabic Q-float constructions involve merger of a symmetric set of two autonomous phrases. In order for the set to be labeled, it should be asymmetrized via movement of the associate out of the set. A major result of this study is that

the distribution of FQs in Arabic serves as a powerful diagnostic of the distribution of lower copies of displaced NPs (NP trace positions in traditional terms). It also provides support for the labeling framework that emerged from Chomsky (2013) and related work.

Abbreviations

1 = first person, 2 = second person, 3 = third person, ACC = accusative, CLF = classifier, COMP = complementizer, DAT = dative, DU = dual, F = feminine, FQ = floating quantifier, FUT = future, GEN = genitive, IPFV = imperfective, M = masculine, NEG = negation, NOM = nominative, PASS = passive, PL = plural, PST = past, SG = singular

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Competing interests

The author has no competing interests to declare.

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