

Revisiting Arabic predicative structures

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Abstract

This work brings together the array of predicative structures available across the different Arabic varieties and argues in favour of an analysis that keeps locative predications apart from other vanilla predications on the basis of a number of differing (morpho)syntactic behaviours. While locatives are initially presented as a unified set of structures, they are later differentiated as canonical vs. inverted and treated as two separate constructions. The former is attributed a $be_{LOC} \langle \text{SUBJ}, \text{OBL} \rangle$ analysis and the inverted counterpart is here argued to involve a GF - θ -role remapping that renders a $be_{LOC} \langle \text{SUBJ}, \text{OBJ} \rangle$ analysis where the *theme* does not function as a SUBJ, but as an unaccusative OBJ; an analysis that is a first of its type in the literature on Arabic and one that challenges the mainstream analysis of this structure, as well as what NOM case identifies in the grammar of the Modern Standard Arabic variety. The analysis for inverted locatives being pursued here in turn predicts and diachronically motivates the otherwise synchronically *ad hoc* constraints that characterise (predicative) BE possessive structures, which are here understood to be direct descendants of inverted locative structures.

1 Introduction

The paper aims to bring to the fore lesser known facts about predicative structures in Arabic and to then focus on highlighting why predicative locative structures stand out from the rest. I will do so by first bringing together in §2 the different predicative/copular structures available across the Arabic dialectal varieties. In §3 I then briefly review the treatment of predicative structures in the LFG literature and point out how predicative locatives appear to have been singled out by the distinct treatment they have received by several proponents. Reinforced by what has already been presented in previous LFG literature, in §4 I provide arguments of both a synchronic and diachronic nature that suggest that Arabic predicative locatives also merit a separate treatment, in contrast to the previous uniform account of Arabic predicative structures in Attia (2008). In §5 I then work out an analysis of the key components of the different predicative locative structures while in §6 I summarise the contributions presented in this study.

2 The nature of predicative structures in Arabic

Predicative structures in Arabic and the interaction with the presence/absence of a copula have received ample attention, even in the typological literature (e.g., Stassen (2009), Pustet (2003)). They have been shown to take PP (1a),¹ [-DEF] AP (1b), [-DEF] NP (1c), AdvP (1d) and CP (e.g., (7b) in §3) predicates with a zero copula or an obligatory copula in non-PRESENT TENSE contexts that is expressed by one of the relevant paradigmatic forms of the copula *kān* ‘be’, which linearly precedes or follows the SUBJ.

¹PP predications need not solely be locative in nature. They could for instance express a BELONG sort of clausal possessive structure, where e.g., ‘bag of-me’ means: ‘The bag is mine’.

- (1) a. (kān-u) al-awlād (kān-u) **fil-bait**
 be.PFV.3-PL DEF-children be.PFV.3-PL in.DEF-house
 The children were/are in the house. locative
- b. iṭ-ṭālib-a **zakiy-ya** c. iz-zalame **muḥandis**
 DEF-student-SGF clever-SGF DEF-man engineer.SGM
 The student (F) is clever. The man is an engineer.
- d. il-ḥafla **bukra**
 DEF-party tomorrow
 The party is tomorrow. Palestinian

[+DEF] NP predicates (as in (2)) render identificational or specificational predicative structures. In these contexts, some dialects allow for the optional presence of an inflecting 3rd PERSON pronominal copula form that follows the SUBJ, when available, since the SUBJ can be dropped in these structures (Li and Thompson 1977, Eid 1991, Fassi-Fehri 1993, Fassi-Fehri 2012, Ouhalla 2013, Choueiri 2016).²

- (2) a. Amal Alamuddin ?* \emptyset / **hiyye** Amal Clooney
 Amal Alamuddin COP.3SGF Amal Clooney
 Amal Alamuddin is Amal Clooney. identificational
- b. Sami \emptyset /**huwwe** mudīr l-madrasa
 Sami COP.3SGM director.SGM DEF-school
 Sami is the director of the school. specificational - Lebanese: Choueiri (2016, 102)

The use of the negative pronominal copula with which predicates can be negated may either display full agreement in PERSON, NUMBER and GENDER with the SUBJ's CONCORD feature values or take a default form, as the alternation represented via the ~ (tilde) symbol illustrates in (3) below.

- (3) hē **manhāš** ~ **miš** marēḍ-a
 she NEG.COP.3SGF NEG.COP sick-SGF
 She is not sick. NEG AP predication - rural Tulkarem

Building further on Stassen (1996), Camilleri and Sadler (2019b, 2020) demonstrate that previous accounts that concentrate on the copula across the Arabic varieties do not fully capture the rich array of what is available. New grammaticalised copulas across the different varieties have emerged, which seem to first target locative predications (4a) as they later diffuse and target more generalised stage-level (4b) and individual level predicative contexts (4c).

- (4) a. ti-gul huma **gāʿid-īn** fi magṭaʿ
 2-say.IPFV.SGM NOM.3PL COP.3-PL in remote area

²In Classical/Modern Standard Arabic, APs and NPs used predicationally are NOM-marked. In the context of the copula *kāna* 'be' (and other similar elements that can partake in this structure), these are ACC-marked.

- It's as though they were in a remote area. urban Hijazi: Basulaiman (2018, 32)
- b. moḥammed **rā-h** b-xēr
Mohammed COP-3SGM.ACC with-good
Mohammed is well. stage-level predicate - Algerian: Tapiéro (2002, 14)
- c. bənāt merdīn kθīr kwās=**ənnē**
girl.PL Mardin a lot beautiful.PL=COP.3PL
The girls of Mardin are very pretty. individual-level predicate - Mḥallamiye: Retsö (1987, 221)³

The above data constitute instances of vanilla predicative structures. Another set of predicative/copula structures exists and has been discussed in e.g., Soltan (2007), Mohammad (2000), Alharbi (2017) and Alsaedi (2019). These structures include: predicative locative inversions (5a), a sub-set of clausal possessive structures, which, building on Hallman's (2020) analysis (which differs from previous literature), I here refer to as BE possessives (5b)⁴ and existential structures, at least in Classical/Modern Standard Arabic (5c).⁵

- (5) a. (kān) ʔind əš-šajara ʔšūš
be.PFV.3SGM at DEF-tree.SGF nest.PL
Near the tree were/are nests. inverted locative - urban Palestinian: Boneh and Sichel (2010, 18)
- b. ʔand karīm ḥsāb bəl-bank
at Karim account in.DEF-bank
Karim has a bank account. BE possessive - Syrian: Hallman (2020, 2)
- c. hunāka turuq-un kaθīr-a
there way.PL-NOM.INDEF a lot-SGF
There are a lot of ways. existential - Modern Standard Arabic: arabiCorpus

This data set brings together the syntactically predicative or copular structures that are available in Arabic. Their grouping here does not imply that they call for a uniform analysis. Rather, I want to next demonstrate how predicative locatives stand out from the rest of the vanilla predicative structures and that in properly understanding and analysing these structures in the first place, we will then be in a position to better analyse the constructions that have diachronically developed out of them. Before progressing any further I will first in §3 provide an overview of

³The enclitic pronominal copula in *qəltu* Arabic dialects has developed as a post-predicative copula influenced by contact with Neo-Aramaic. The grammar of these dialects differs from more mainstream non-*qəltu* dialects and remains heavily underdescribed. The analysis to follow in §5 will unfortunately not incorporate an account of post-predicative copulas.

⁴Without going into much detail here, it suffices to point out that BE possessives are distinguished from HAVE possessives across the Arabic dialects. The latter are not predicative, but transitive in nature and are predicated of a (grammaticalised) verbal element (Comrie 1991, Stassen 2009, Camilleri 2019, Hallman 2020).

⁵While existential structures may be deemed predicational in Modern Standard Arabic, this is not so in the dialects. For this reason, a discussion of existential data will not figure here.

the core literature on the treatment of predicative and copular structures in LFG, on the basis of which I will then in §4 be able to carve out the most adequate analysis for the primary data of interest here.

3 The treatment of predicative structures in LFG

Predicative structures have been given a fair share of attention in LFG. I here first consider the important c-structure considerations to bear in mind and then proceed to f-structure concerns central to predicative structures.

Mainstream LFG is not characterised by pieces of empty syntax at the c-structure level. This does not equate to saying that the absence of such precludes information from still reaching the syntax in one way or another. This can for example be observed in the context of (subject) *pro*-drop and its analytical treatment, where the c-structure does not associate with any piece of tree that stands in for any covert SUBJ element. A similar scenario holds in the context of copulaless structures.

In Arabic and in other languages (see e.g., Stassen (1997), Nordlinger and Sadler (2007)), the absence of a copula *often* contributes morphosyntactic and morphosemantic information associated with the PRESENT TENSE as well as POSITIVE POLARITY values. This information is not accounted for via the lexical entry, unlike the treatment of *pro*-drop. Rather, it is constructionally-specified, i.e. specified via the annotation on the phrase structure rule. Given a sample phrase structure rule such as (6), it is specifically the epsilon (ϵ) notation (Dalrymple 2001) that hosts the information that is realized by the construction in the absence of a c-structure correspondence in I, which is then what gets fed into the f-structure. The epsilon notation is in an either-or relation with the presence of an I node, which in Arabic can be filled by the copula *kān* ‘be’ or the pronominal copula (which fully inflects when expressing negation). The XP following the copula in (6) is meant to refer to any underspecified phrasal category that features as a predicate, including CPs, NPs, APs, PPs and AdvPs.

$$(6) \quad \bar{I} \rightarrow \left\{ \begin{array}{l} I^o \\ (\uparrow \text{TENSE}) = \text{NON-PRES} \\ ((\uparrow \text{SUBJ PRED}) = \text{'PRO'}) \end{array} \right. \mid \left\{ \begin{array}{l} \epsilon \\ (\uparrow \text{TENSE}) = \text{PRES} \\ (\uparrow \text{POL}) = \text{POS} \end{array} \right\} \quad \uparrow = \downarrow \mid (\uparrow \text{GF}) = \downarrow \quad \text{XP}$$

The XP has been here annotated with what reads as an analytical choice between a GF, which would entail that the head of the XP functions as the lexical head/PRED of the GF’s f-structure, or a co-head function. The latter analysis is a possibility based on the fact that the XP in the c-structure functions as a complement to a functional category, namely I (Bresnan 2001).

The ambiguity that characterises the XP annotation draws from the varied analyses predicates or (non-SUBJ) postcopular items have been attributed in LFG. The different analyses can be collapsed into a distinction based on whether the predicative part of the structure (i.e. the XP in (6)) functions as the f-structure’s PRED, i.e. the (lexical) head of the construction, with the copula functioning as a co-head, bearing grammatical, rather than lexical information, or whether it is the copula, irrespective of whether it is present or not, that functions as the f-structure’s PRED.

The former analysis is referred to as the single-tier analysis, as there is no additional f-structure internal to the larger/outer f-structure that would host the head of the predicative phrase separately. Under this analysis, the copula, whether covert or not, solely contributes grammatical information to the structure (Nordlinger and Sadler 2007). On the other analysis, the copula, be it overt or not is taken to function as the structure's PRED, whereby the postcopular XP in (6) functions as a complement to the copula (Rosén 1996, Butt et al. 1999, Dalrymple et al. 2004, Attia 2008). Under this broader characterisation of the copula as the f-structure's PRED, the GF that associates with the non-SUBJ argument of the copula has been attributed varied analyses. Most prominent of these is the distinction between an open vs. closed argument, which translates into the predicate being attributed with an XCOMP or a PREDLINK GF (Dalrymple et al. 2004). While the PREDLINK is a GF that specifically maps onto the predicative complements of copulas, the XCOMP is a non-core GF used elsewhere in the grammar. The distinct nature of the two analyses is meant to account for the differences observed in representative data such as (7). In (7a), the predicative AP displays agreement with the SUBJ, implicative of the functional relation that associates the agreement on the predicate with the f-structure's SUBJ as though the SUBJ is its own. On this analysis, the copula is viewed as a raising predicate, where it does not subcategorise for its own SUBJ. This open complement analysis is however unable to account for the data in (7b), since the SUBJ of the matrix structure differs from the SUBJ within the complement, which hosts a free relative clause. There is thus no functional relation between any of the GFs in the different f-structures.

- (7) a. el-bent k̄ān-at nāym-e
 DEF-girl be.PFV-3SGF asleep-SGF
 The girl was asleep. adjectival predication
 rural Galilean: Mohammad (1998, 4)
- b. inti mantīš (i)lli min tūnis
 you NEG.COP.2SG COMP from Tunis
 You are not the one from Tunis. SUBJ of matrix ≠ SUBJ of complement
 Rammun: Awwad (1987, 116)

Different predicative structures can easily be collapsed under the PREDLINK double-tier analysis as Attia (2008) does when analysing vanilla predicative structures in Arabic, circumventing issues that have to do with the inability to assign an XCOMP GF to the postcopular item without analytically differentiating amongst different predicative structures. There is however one analysis that aligns with the double-tier set of analyses that stands out in accounting solely for (canonical) predicative locatives, and that is: $be_{LOC} \langle SUBJ, OBL_{\theta} \rangle$. This analysis has been presented for locative predications in Bresnan and Kanerva (1989), Bresnan (1989, 1994, 2001), Falk (2004), Bresnan et al. (2015) and Sulger (2015) for Bantu, English, Hebrew and Hindi/Urdu, respectively, as well as for locative and existential structures in Hungarian (Laczkó 2012).

This brief summary of both the analyses of predicative structures in LFG and an overview of their different treatments and in which sort of literature provides a snapshot of the fact that predicative locatives in certain LFG analyses have been provided with a distinct analysis that

distinguishes them from other sorts of predicative structures. Building on Falk (2004), Camilleri and Sadler (2020) suggest that locatives might in effect be special in Arabic too. Here I will take this proposal a step further as I provide arguments why this is the case and work out its details. I specifically go for a uniform f-structure treatment of predicative locatives that is independent of the absence/presence of the copula. This renders a treatment that differs slightly from Falk's account of the Hebrew counterparts, since his account resorts to a single-tier analysis of predicative locatives in copulaless contexts. As I work my way through the different arguments as to why predicative locatives in Arabic should be analysed differently from other standard predicative structures in §4, I will demonstrate how this ends up predicting the two sorts of locative construals available, based on the structures' varied GF - θ -role mappings associated with the copula be_{LOC} as well as diachronic developments out of such predicative structures.

4 Singling out predicative locatives

In this section I explore certain grounds on the basis of which one could argue that in Arabic too, there is scope to analytically single out locative predications from other standard predicative/copular structures and that the apt analysis is one along the lines of: $be_{LOC} <SUBJ, OBL_{\theta}>$ for canonical locatives and $be_{LOC} <SUBJ, OBJ>$ for their inverted counterparts.

I here present five different behaviours which distinguish locative predications from the rest of the vanilla predicative structures. These are: a) variation in the SUBJ's DEFINITENESS constraints, b) NEG realization, c) varied copula agreement behaviours, d) variation in the resolution facts that accompany coordinate PP SUBJS, and finally e) a diachronic-based argument that has to do with the fact that locatives primarily stand out as the first targets for emergent copula structures and the fact that they are the only predicative structures that function as precursor structures and bases for further grammatical developments.

Definiteness. The vanilla predicative structures presented in (1) all involved [+DEF] SUBJS. This is in fact the only sort of SUBJ type that is available for them, as illustrated through the ungrammaticality of both an unmodified [-DEF] SUBJ (8a) and a modified one (8b).

- (8) a. *binit ḥilw-a
 girl sweet-SGF
 Intended: A girl is sweet.
- b. *binit zyīr-a ḥilw-a
 girl little-SGF sweet-SGF
 Intended: A small girl is sweet.⁶

In contrast, the SUBJ of locatives *can* be a [-DEF] (modified or unmodified) SUBJ, yet an unmodified indefinite subject cannot be sentence initial, as the ungrammaticality of (9) illustrates.⁷

⁶The only possible reading available for both the structures in (8) is that of an attributive use of the adjective(s).

⁷The impossibility of a [-DEF] SUBJ appearing in sentence-initial position is a fact that holds true of verbal

A *modified* [-DEF] counterpart *can* however function as a SUBJ of a predicative locative in a sentence initial position at least in certain dialects, as illustrated in (10).

- (9) *binit fil-bait
girl in.DEF-house

Intended: A girl is in the house.

- (10) **binit zyīr-a** (qāʿd-a) fil-bait
girl small-SGF COP-3SGF in.DEF-house

A small girl is in the house. rural Tulkarem

Circumventing the constraint that prohibits (unmodified) [-DEF] SUBJs in sentence initial position is easily done in non-PRESENT TENSE structures. Therein, as in (11), the SUBJ ends up appearing in yet another canonical SUBJ position; following the copula – an output that would *still* be deemed ungrammatical in the context of non-locative predicative structures.

- (11) **kaan-at** binit fil-bait
be.PFV.3-SGF girl in.DEF-house

A girl was in the house. PAST TENSE

In the PRESENT TENSE, however, the different dialects appear to have at most two possibilities with which to rectify the situation. The first is to maintain the linear order of the constituents where NP < PP but where a grammaticalised (erstwhile PP) element *fih* (or its counterparts in the different dialects) literally meaning ‘in-3SGM.GEN’ precedes the SUBJ, as in (12). This functions as one of the most common repair strategies across the different Arabic varieties with which to license/salvage a [-DEF] SUBJ in a locative predication.⁸ No similar strategy occurs in the context of the other vanilla predicative structures.

- (12) **fih** binit fil-bait
FĪH girl in.DEF-house

A girl is in the house. FĪH insertion

predications as well, as illustrated through the ungrammaticality of (i). [-DEF] DFs, represented in (ii) in small caps, understood to sit at the left-periphery of the structure in some SpecCP position are on the other hand accepted. See Fassi-Fehri (1993) and Ouhalla (1997, 1999) for further details on the Modern Standard Arabic data facts.

- i *wlād bi-ḥibb-u yi-lʿab-u fuṭbūl
boy.PL BI.3-love.IPFV-PL 3-play.IPFV-PL football
Intended: Boys love playing football.

- ii BINIT (kān-at) fil-bait, miš walad
girl be.PFV.3-SGF in.DEF-house NEG boy
A GIRL was/is in the house, not a boy. Palestinian

⁸Albeit somewhat redundant due to its original function, this strategy has with time also infiltrated non-PRESENT TENSE locative structures such as those in (11) and has in some dialects even ended up becoming obligatory. It thus ended up changing its function from one that allowed [-DEF] SUBJs in the absence of any other item that could precede it, to one that more generically licenses the presence of a [-DEF] SUBJ within a locative predication.

The alternative remedy which the Arabic varieties have at their disposal is to change the structure completely, rendering an inverted locative structure as in (13) repeated from (5a). This construction goes part and parcel with the presentational effect it renders, where it involves *in-situ* informational focus that presents the [-DEF] *theme* as new information in the discourse context, with the PP *locative* functioning as the topic, i.e. presupposed/known information.⁹ Just as Bresnan and Kanerva (1989) demonstrate for Chicheŵa, in Arabic we similarly find that the consequences of this discourse effect include a [-DEF] restriction on the *theme*, a correlated inability for the *theme* to be expressed as a pronoun and the *theme*'s possibility to be contrastively focussed (14). In this structure (as also happens in the case of structures such as (11) *cf.* fn. 8) one observes the infiltration of *fīh* (or its equivalents). Depending on the dialect in question, its presence may be obligatory or optional and can precede or follow the PP *locative* so long as it always precedes the NP *theme*.

- (13) (kān) ʕind əš-šajara ʕšūš
 be.PFV.3SGM at DEF-tree.SGF nest.PL

Near the tree are/were nests. Inverted LOC - urban Palestinian: Boneh and Sichel (2010, 18)

- (14) fil-bait WALAD miš binit
 in.DEF-house boy NEG girl

In the house there's a boy, not a girl. rural Tulkarem

NEG realization. Concomitant with the availability of [-DEF] *themes* in predicative locatives is the morphosyntactic realization of negation in the structure. In non-PRESENT TENSE contexts, the realization of sentential negation ((↑ ENEG) = + (Przepiórkowski and Patejuk 2015)) is across the different copular structures in the vernacular Arabic varieties uniformly expressed via a NEG-realizing inflectional form of the copula *kān* 'be'. In PRESENT TENSE copular structures with [+DEF] *themes*, as illustrated through (3) in §2 and (15) below, sentential negation is expressed via a negative pronominal copula, which, depending on the particulars of the different dialects may involve the use of either default or inflecting forms.

- (15) il-binit (lissat-ha) miš ~ manhāš fil-bait/mara
 DEF-girl still-3SGF.GEN NEG.COP NEG.COP.3SGF in.DEF-house/woman

The girl is not yet in the house/a woman. NEG pronominal copula - rural Tulkarem

Pronominal negation is however *not* available in the context of [-DEF] *themes*, i.e., in the context of canonical and inverted locative structures (and by extension BE possessives). Rather, (↑ ENEG) = + is expressed via the NEG-realizing inflectional counterpart of *fīh*, which takes the form of: *mā fī(š)*, *fīš* or *fīšš*, depending on the dialect, at the exclusion of e.g., *miš*, as in (16).¹⁰

⁹Note that the use of 'topic' here should not be understood as the grammaticalised/f-structure DF label, as in this context the PP bears no DF role. Rather, its postcopular position in Arabic is a canonical GF position. Reference to topic here aligns with the information-structure TOPIC which is composed out of the [-NEW] [+PROM] feature values in Butt and King's (1996) geometry of information features. The *theme* in this structure's presentational nature takes on the [+NEW] [+PROM] FOCUS feature set.

¹⁰Without going into much details here, but mostly following a particular segment of the literature (given that

- (16) a. **fī-š** / *miš binit fil-bait
 FĪH-NEG / NEG.COP girl in.DEF-house
 A girl is not in the house. NEG canonical locative
- b. fil-bait **fī-š** / *miš binit
 in.DEF-house FĪH-NEG / NEG.COP girl
 In the house there isn't a girl. NEG inverted locative - Palestinian

Copula agreement. When it comes to copula agreement, key to our data is that as illustrated through (1a), for instance, the verbal copula fully agrees in PERSON, NUMBER and GENDER with the [+DEF] SUBJ's CONCORD feature values. The verbal copula in locatives with a [-DEF] *theme*, whether inverted or not, displays either full or default 3SGM agreement, depending on the dialect. Default agreement is the most widespread strategy across the dialects. The paradigmatic data set in (17) comes from rural Galilean, which happens to be one of those few dialects that still allow for full copula agreement with the [-DEF] *theme*. The data illustrate two word order variations of the canonical locative predication and demonstrate additional agreement nuances therein. In (17b) we further observe how in this particular dialect the [-DEF] *theme* can precede the copula (so long as the *theme* is itself preceded by *fīh*) and when this is the case, only full agreement is possible on 'be'.

- (17) a. kān-u ~ kān fīh xams zlām bed-dār
 be.PFV.3-PLM be.PFV.3SGM FĪH five man.PL in.DEF-house
 Five men were in the house. p. 50
- b. fīh xams neswān kān-en / *kān bed-dār
 FĪH five woman.PL be.PFV.3-PLF be.PFV.3SGM in.DEF-house
 Five women were in the house. canonical locative - p. 51
- c. kān-u ~ kān ʕen-na xams zlām
 be.PFV.3-PLM be.PFV.3SGM at-1PL.GEN five man.PL
 Five men were at our place. inverted locative - rural Galilean: Mohammad (1998, 52)

PP coordinate conjuncts and resolution. The next varied sort of morphosyntactic behaviour has to do with the observation that coordinated PPs display distinct behaviours in locative vs. other structures (whether predicative or verbal). The data to be presented serves a dual function in that it also ends up rendering itself as a test for PP subjecthood in Arabic, which is essential in the analysis of inverted locatives.

Testing the subjecthood of PPs in Arabic is possible by for instance observing their behaviour in raising structures; a test that has recently become available for use in Arabic following the analysis of a number of relevant structures in ElSadek and Sadler (2015) and Camilleri and Sadler (2019a). I here make use of one of their predicates – *šakl*, whose literal meaning is 'form,

there are varied treatments of *fīh*, namely Halila (1992), Eid (1993) and Hallman (2020), *fīh* is essentially treated as a (vacuous) verbal element whose grammaticalised verbal status is best evinced and reinforced through its ability to realize NEG, as in (16). An analytical treatment of *fīh* within LFG will be pursued in §5.

shape’, but has grammaticalised a verbal function with the meaning ‘seem, appear’. In (18), *šakl* ‘seem, appear’ heads the matrix clause which embeds a PAST TENSE locative predication in its complement and the embedded clause’s locative PP surfaces in the matrix in a preverbal position. (A post-verbal position would have been just as appropriate). The inflection on *šakl* is the default 3SGM, as is the marking on the copula *kān* ‘be’ in the embedded clause, which in turn provides additional support that the embedded locative predication is an inverted one. Full agreement on the copula would have been expressed by the 3SGF *kān-at*, since the *theme* is an inanimate PL NP.

- (18) fuq il-xizane šakl-u [kān flūs kθiyr
on DEF-wardrobe.SGF seem-3SGM.GEN be.PFV.3SGM money a lot
mu-xbiy-ya]
PASS.PTCP-hide-SGF

On the wardrobe seems to have been a lot of hidden money. rural Tulkarem

To further determine that a locative PP can indeed function as a SUBJ, including the SUBJ of a raising structure, as in (18), I demonstrate a more transparent structure involving coordinated PP locative arguments, especially in order to further determine that the 3SGM marking on the matrix in (18) is not meant to imply that the structure should be interpreted as an *it*-expletive type of construction (and hence not involving raising at all). Within the adjectival predication (19a) and the equative predication (19b) below, we find 3PL resolution both on the matrix raising predicate as well as on the PAST TENSE ‘be’ (19a) and pronominal (19b) copulas within the embedded clause.

- (19) a. [fuq il-xezāne]_i u [fi qāʕ il-bīr]_j šakla-hum_{i+j}
on DEF-wardrobe.SGF CONJ in bottom.SGM DEF-well.SGM seem-3PL.GEN
[kān-u_{i+j} malyan-ēn flūs]
be.PFV.3-PL full-PL money.PL

On the wardrobe and in the bottom of the well seem to have been full of money.

- b. [fūq il-xezāne]_i u [fī qāʕ il-bīr]_j šakla-hum_{i+j}
on DEF-wardrobe.SGF CONJ in bottom DEF-well seem-3PL.GEN
hummi_{i+j}/*hu ʔaḥsan taxmēn il-i weyn li-flūs
COP.3PL/COP.3SGM good.ELAT guess.SGM to-1SG.GEN where DEF-money.PL
mumkin t-kūn t-xabb-at
perhaps 3F-be.IPFV.SG PASS-hide.PFV-3SGF

On the wardrobe and in the bottom of the well seem to be my best guess as to where the money may be hidden. rural Tulkarem

In contrast to the 3PL resolution observed in the context of coordinated PP SUBJs in (19), a counterpart to the locative predication in (18) involving coordinated PPs, as in (20), does not result in a similar behaviour. Rather, the matrix raising predicate and embedded copula maintain a 3SGM default form, as in (18).

(20) [fuq il-xezāne]_i u [fi qāf il-bīr]_j šakl-u / *šakla-hum
 on DEF-wardrobe.SGF CONJ in bottom DEF-well seem-3SGM.GEN / seem-3PL.GEN
 kān / *kān-u flūs kθiyr mu-xbiy-ya
 be.PFV.3SGM / be.PFV.3-PL money.PL a lot PASS.PTCP-hide-SGF

On the wardrobe and in the bottom of the well, there seem to have been a lot of hidden
 money. rural Tulkarem

The above data demonstrate that PP *locatives can* function as SUBJs in Arabic. They additionally shed light on a contrast that holds between PPs as SUBJs of an inverted locative and PPs as SUBJs in other predicative clauses: The latter clearly trigger agreement, as evinced through the 3PL resolution in (19) in the context of raised coordinated SUBJs, while PPs in inverted locatives *do not*, as the ungrammaticality of the resolved argument in (20), demonstrates. I take this to suggest that the 3SGM agreement in inverted locatives results from the non-canonical mismatch that results, whereby the logical subject, i.e., the highest thematic argument does not map onto the highest GF in the structure. This argumentation also extends to the copula agreement facts presented in (17c) above, given that the highest GF in the inverted locative, i.e., the SUBJ does not happen to map onto the highest θ -role, i.e., the *theme* argument.

Diachronic-oriented motivations. The final points of divergence that distinguish locative predications from other vanilla predications are diachronic in nature. The first has to do with the fact alluded to in §2, where somehow, the emergence of new copulas across the different Arabic dialects, independent of the type of grammaticalised copula strategy that is involved, has targeted locative structures across the board. While the copula has also infiltrated other predicative structures, in particular ones with stage-level predications, this is only true of certain dialects (Camilleri and Sadler 2019b). Locative predications thus clearly stand out as earlier targets for copula emergence. The second diachronic point to be made is the fact that locative predications turn out to be the *only* (non-grammaticalised) predicative structures that have led to further grammaticalisations, yielding the development of existential and possessive structures.¹¹

I take the above presented set of arguments to provide us with ample grounds on the basis of which to suggest that predicative locative structures merit their own separate analysis in Arabic. Beyond that, however, there are a number of further ramifications on the grammar at large, particularly if we were to concentrate on both the synchronic and diachronic syntax of existential and possessive structures in Arabic. Space and scope constraints restrict me from engaging into this in any detail, yet it suffices to state here that the analysis of inverted locative structures along the lines being argued for here predict and determine, without any need to resort to *ad hoc* constraints, both the syntax of, and the morphosyntactic conditions on BE possessives such as (5b), which are predicational structures, and which I take to be direct developments specifically out of inverted locatives.

¹¹None of these grammaticalised structures make use of any of the newer-type copulas that have targeted locative predications across the larger Arabic macrosystem. This further supports the view that copula emergence has taken place at a much later stage in the system.

5 Working out an analysis

For canonical locative structures, the analysis being argued for here is one where the copula functions as a two-place predicate with both its arguments, i.e. the NP *theme* and the PP *locative* mapping onto two core GFs. Couched within standard Lexical Mapping assumptions (Bresnan and Kanerva 1989, Bresnan and Zaenen 1990) that couple an argument ranking hierarchy with the ranking of the [-/+r(estricted)]/[-/+o(bjective)] feature values that compose the core GFs, the *theme* gets intrinsically identified as a [-r] argument, while the *locative* is identified as [-o]. Well-formedness constraints result in the *theme*'s mapping onto the SUBJ GF, as represented in Table 1. Since I am here assuming a uniform analysis of predicative locative structures that is independent of a copula in the structure, Table 1 also incorporates a representation of null- be_{LOC} .

$be_{\text{LOC}}/\text{null-}be_{\text{LOC}}$	<	arg 1	arg 2	>
		<i>theme</i>	<i>locative</i>	
		[-r]	[-o]/[+r]	
		SUBJ	OBL	

Table 1: The θ -role - GF mapping in **canonical predicative locatives**

When compared with the analysis for canonical counterparts in Table 1, accounting for the inverted locative facts as they stand for Arabic (which find parallels in non-predicative counterparts too) constitutes a transparent instance of a θ -role - GF mapping reversal; something which is not an obvious possibility were we to analyse predicative locatives as involving a closed double-tier PREDLINK analysis as previous work has done, thus resulting in the loss of generalisations over locative structures at large. Following Kibort (2007) and her analysis grounded in the markedness hierarchy of the decomposition feature values, the *theme* argument in non-canonical locative structures, while maintaining its inherent [-r] value gets assigned a [+o] (see Table 2), which in turn functions as a ‘mechanism of increasing markedness’ (p. 267) and thus gets mapped onto an OBJ. This is in line with its unaccusative OBJ status in the grammar; i.e., an OBJ that can alternate with a SUBJ function in certain intransitive contexts. It also aligns with the added information-structure load which the inverted locative expresses when compared to its canonical counterpart. The *locative* is then available to map onto the SUBJ function, which constitutes the highest (and least marked) compatible function. The alternation these two locative structures display illustrates how in Arabic, there are multiple BE lexical entries. More specifically, there are two different mappings available in the context of the BE_{LOC} copula; each with its different requirements, as will be shown in their respective lexical entries in (31) and (33).

The OBJ function the *theme* ends up associating with in inverted locative structures is by no means the usual or canonical one. For starters, since the structure also happens to express presentational focus, as made reference to in §4, this particular OBJ must be [-DEF] and non-pronominal. Unlike canonical OBJs it cannot be passivised or relativised upon either. Although more work needs to be done, a preliminary investigation of the Arabic data suggests that such behaviours hold true of unaccusative OBJs in structures involving inverted locatives in general.

$be_{LOC}/null-be_{LOC}$	<	arg 1	arg 2	>
		<i>theme</i>	<i>locative</i>	
		[-r]	[-o]	
		[+o]		
		OBJ	SUBJ	

Table 2: The θ -role - GF mapping in **inverted locative predications**

What unifies the predicates in such syntactic contexts is their unaccusative nature. At this juncture it is worth making reference to data from Classical/Modern Standard Arabic to ensure that all potential issues are dealt with, in the hope of reaching a true comprehensive understanding, especially since predicative inverted locatives in the Arabic literature have not been treated in the way they are being analysed here. In the varied analyses provided, the PP is treated as having scrambled into a position that precedes the *theme* from its usual position in canonical locative structures, but where importantly, the *theme* is nonetheless deemed as maintaining its SUBJ function within the structure (Soltan 2007, Alharbi 2017, Alsaedi 2019). Key to the data is the fact that in non-vernacular Arabic, NPs are CASE-marked, and as observed in (21) below, the *theme* in the inverted locative maintains the NOM-marking as otherwise present on the *theme* in the canonical counterpart. It has been this NOM-marking (even within the context of a *kāna* ‘be’) that appears to have led to this seemingly uncontroversial/unchallenged analysis of the *theme* as the structure’s SUBJ, even if the agreement facts observed on the copula, for instance, are not consistent with a context in which the *theme* is the structure’s SUBJ.

- (21) *kāna* ~ *kān-at* *fī* *ʔal-bayt-i* *ʔimraʔat-un*
 be.PFV.3SGM be.PFV.3-SGF in DEF-house.SGF-GEN woman.SGF-NOM.INDEF

A woman was in the house. Modern Standard Arabic: Soltan (2007, 111)

To be able to challenge the previous literature is to first determine that PPs can function as SUBJs in Arabic. This has been evinced in §4 through their ability to partake in structure-sharing within SUBJ-to-SUBJ raising constructions and their linear positioning in canonical pre- and post-verbal SUBJ positions. Secondly, the revisiting of something more basic is required, and that is: the function of NOM CASE in Arabic. That CASE does not always align in a one-to-one relation with any one given GF is well-known (e.g., Mohanan (1982)), and in effect this is quite clear in the Arabic dialectal system at large, where e.g., SUBJs can be cross-referenced by ACC and DAT pronominal forms incorporated on the verb. The proposal being put forward here is that NOM CASE in Arabic may be either informationally-grounded or assigned to the highest available nominal GF. The former is illustrated through (22), where the grammatical TOPIC is NOM-marked yet then bound by an ACC resumptive pronoun functioning as the OBJ. That NOM happens to align with the SUBJ GF is itself an artifact of the SUBJ’s prototypical expression as a NP and which NP happens to additionally function as a DF of sorts (Bresnan 2001).

- (22) *ʔal-riwāyat-u_i* *ʔallaf-at-ha_i* *zaynab-u*
 DEF-novel.SGF-NOM write.PFV.3-SGF-3SGF.ACC Zaynab-NOM

(As for) the novel, Zaynab wrote it. Modern Standard Arabic: Ouhalla (1997, 12)

Under the proposal being made here, in the context of inverted locatives (21), as is also the case in BE possessives (23a) and structures that take PP *experiencers* (23b), since the SUBJ happens to be non-canonically expressed by a PP, NOM-marking simply gets assigned to the next available NP in the structure, which happens to be the OBJ, resulting in the type of copula (and verbal) agreement mismatches discussed earlier in §4 in light of (17c).

- (23) a. *kāna* ~ *kān-at* *ʕinda ʔal-ʔawlād-i* *sayyarat-un*
 be.PFV.3SGM be.PFV.3-SGF at DEF-boy.PL-GEN car.SGF-NOM.INDEF
 The boys had a car. BE possessive - p. 111
- b. *ya-ğibu* ~ *ta-ğibu* *ʕala ʔal-muʔmin-īn*
 3-must.INDIC.SGM 3F-must.INDIC.SG on DEF-believer-PLM
ʔaṣ-ṣalāt-u
 DEF-praying.SGF-NOM
 The believers have to pray. PP *experiencer* < NP *theme* - Modern Standard Arabic: Soltan (2007, 109)

With that additional bit of background in place, we move on to account for other bits of structure within locative predications. The first is to cater for *fīh*. *fīh* is essentially syntactically required in the string in the context of a [-DEF] *theme* yet bears no semantic contribution, unlike its NEG-realizing counterpart, and will solely be associated with a FORM feature (Bresnan 1982).¹² The *f*-structure associated with the canonical locative in (24) (which is essentially a PAST TENSE version of (12) above) is presented below.

(24) <i>kān</i> <i>fīh</i> <i>binit</i> be.PFV.3SGM <i>FĪH</i> girl.SGF <i>fil-bait</i> in.DEF-house A girl was in the house.	$\left[\begin{array}{l} \text{PRED} \text{ 'BE<SUBJ,OBL}_\theta\text{'}} \\ \text{TENSE} \text{ PAST} \\ \text{FORM} \text{ FĪH} \\ \text{SUBJ} \left[\begin{array}{l} \text{PRED} \text{ 'GIRL'} \\ \text{DEF} \text{ -} \end{array} \right] \\ \text{OBL}_\theta \left[\begin{array}{l} \text{PRED} \text{ 'IN<OBJ>'}} \\ \text{OBJ} \left[\begin{array}{l} \text{PRED} \text{ 'HOUSE'} \\ \text{DEF} \text{ +} \end{array} \right] \end{array} \right] \end{array} \right]$
--	--

The *abridged* set of rules presented in (25-29) below are laden with analytical stock which I will unpack here.¹³ *fīh* is instantiated as a V that is attributed with a FORM feature (as illustrated in

¹²*fīh* occurs in the context of other [-DEF] *theme*-taking structures including possessive constructions, unaccusative intransitives and non-agentive transitives such as psychological and experiencer verbs; the latter two contexts have not been previously mentioned in the literature, when the distribution of *fīh* is discussed. In all these contexts, unlike in locative predications, *fīh* is by no means obligatory. The NEG counterpart, on the other hand, displays a distinct distribution. As alluded to in §2, *fīh* in existential structures should not be conflated with the function of *fīh* in any of the structures mentioned above and ought to be analysed in its own right.

¹³To be more explicit, the following are the key bits that have been left out from the set of phrase structure rules presented here: 1. The VP rule in (27) lacks reference to optional material that may linearly follow the \bar{V} , 2. The \bar{I} and \bar{V} rules in (26) and (28), respectively, are here being represented without reference to the fact that an optional \widehat{NEG} may precede the I and V nodes, 3. The \bar{I} rule in (26) lacks reference to $\begin{array}{c} XP \\ \uparrow = \downarrow(\uparrow \text{GF}) = \downarrow \end{array}$ material (present

its corresponding lexical entry presented in (34) below). The *fīš* counterpart is treated as a NEG FORM and its lexical entry comes along with the existential constraint (\leftarrow ENEG) = +, which makes reference to the fact that in the f-structure where the NEG FORM feature is, ENEG is also an attribute therein with value +. (\uparrow ENEG) = + in the structure is then expressed either by *fīš* itself or in tandem with other pieces of syntax, e.g. *mā* as part of a bi-partite NEG realization, depending on the dialect (Camilleri and Sadler 2017). As the phrase structure rules demonstrate, *fīh* is allowed to co-occur with *kān* ‘be’, yet in a context where (\uparrow ENEG) = + is expressed by the copula (pronominal or verbal), the presence of a NEG FORM is excluded.

The I node is in a complementary distribution with the ϵ and in the absence of I, the TENSE value can only be PRESENT (see e.g., Nordlinger and Sadler (2007)). The absence of a copula in I implies other things in Arabic. As the data presented in this study illustrate, the availability of a [-DEF] SUBJ in such contexts obligatorily requires the presence of *fīh*. What the absence of a copula *does not* imply, in Arabic, despite a number of previous claims in the literature, is that the structure is POL = + (since the negative pronominal copular form is assumed to occupy a position in I when available). It has here been demonstrated through the data contrasts presented in (15) and (16) in §4 that (\uparrow ENEG) = + can *still* be expressed, even within a copulaless structure. It is thus for this reason that (\uparrow ENEG) = – is represented only as an *optional* possibility under the ϵ . In a context where a copulaless structure *does* express (\uparrow ENEG) = +, then this must obligatorily be a context where a [-DEF] SUBJ or OBJ (generalised as (\uparrow MINUSR)) is present as well as the NEG FORM *fīš*.¹⁴ Finally, the V node in (28), which includes *fīh*, replicates the information otherwise available in the lexical entry. The constraint that determines the distribution of *fīh* in its use in canonical and inverted locative predications (and by extension BE possessives) makes reference to the a-structure - f-structure correspondence assumption in Butt et al. (1997).¹⁵ The rule once again generalises over the SUBJ and OBJ GFs and as dictated perhaps more clearly in the lexical entry in (34), the presence of *fīh* is part and parcel of a structure that must involve a [-DEF] (\uparrow MINUSR) and that this GF must in turn correspond with a *theme* argument.

$$(25) \quad IP \rightarrow \left(\begin{array}{l} \{NP \mid PP\} \\ (\uparrow \text{SUBJ}) = \downarrow \end{array} \right) \quad \uparrow \bar{I} = \downarrow$$

$$(26) \quad \bar{I} \rightarrow \left\{ \begin{array}{l} \left(\begin{array}{l} (\uparrow \text{TENSE}) = \text{NON-PRES} \\ ((\uparrow \text{ENEG}) = +) \\ \neg(\uparrow \text{NEG FORM}) \end{array} \right) \quad | \quad \left(\begin{array}{l} (\uparrow \text{TENSE}) = \text{PRES} \\ ((\uparrow \text{ENEG}) = -) \\ (\uparrow \text{SUBJ DEF}) = - \rightarrow (\uparrow \text{FORM}) =_c \text{FĪH}_- \\ (\uparrow \text{MINUSR DEF}) = - \rightarrow (\uparrow \text{NEG FORM}) =_c \text{FĪŠ}(\š)_- \\ (\uparrow \text{ENEG}) = + \end{array} \right) \end{array} \right\}$$

in rule (28)) that follows I, and 4. The V node in (28) does not represent the otherwise additional availability of the *neg*-counterpart of *fīh*.

¹⁴This constraint kills two birds with one stone and holds not only true of predicative locatives with a [-DEF] *theme*, which depending on the canonical vs. inverted nature of the predication, map onto a SUBJ or OBJ GF, respectively, but also of BE possessives, which as alluded to in the end of §4 are here analysed as direct developments out of inverted locatives and similarly involve the mapping of a [-DEF] *theme/possessed* argument onto an OBJ. The constraint also holds true of the distribution of *fīh* in generalised unaccusative verbal contexts, be they in/transitive. For those dialects in which negation is solely expressed by *mā* along with *fīh* without the use of any designate NEG FORM, modifications in the stipulation of the rules and the lexical entry would have to follow accordingly.

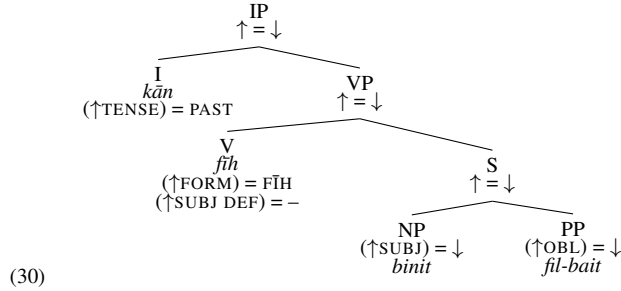
¹⁵If alternative correspondences in e.g., Asudeh and Giorgolo (2012) and Findlay (2017) were to be employed, while the nature of how things are stated would be somewhat different, the morphosyntactic conditions that underpin the distribution of *fīh* would however remain the same.

$$(27) \quad VP \rightarrow \uparrow \bar{V} \downarrow$$

$$(28) \quad \bar{V} \rightarrow (\uparrow \text{FORM}) = \text{FIH}_- \rightarrow \left[\begin{array}{l} (\uparrow \text{MINUSR DEF}) = - \\ (\uparrow \text{MINUSR}) \lambda^{-1} =_c \text{THEME} \end{array} \right] \quad \uparrow = \downarrow | (\uparrow \text{GF}) = \downarrow$$

$$(29) \quad S \rightarrow \left\{ \begin{array}{l} NP | PP \\ (\uparrow \text{SUBJ}) = \downarrow \end{array} \right\} \left(\uparrow = \downarrow | (\uparrow \text{GF}) = \downarrow \right)$$

On the basis of the above rules, the c-structure associated with (24) is provided below.



For completeness, the different lexical entries associated with *kān* when this functions as a be_{LOC} copula are provided in (31) and (33) below.¹⁶ Since the requirements of *fih* in canonical locative structures differ from dialect to dialect, the last constraint in (31) might need to be further refined accordingly, whereby resort to the *fih* strategy in the structure is only necessary if the SUBJ is not modified (32).¹⁷

$$(31) \quad \textit{kān}: I \quad \begin{array}{l} (\uparrow \text{PRED}) = \textit{be}_{\text{LOC}} \langle \text{SUBJ}, \text{OBL} \rangle \\ (\uparrow \text{TENSE}) = \text{PAST} \\ (\uparrow \text{SUBJ DEF}) = - \rightarrow (\uparrow \text{FORM}) =_c \text{FIH}_- \end{array}$$

$$(32) \quad \left[\begin{array}{l} (\uparrow \text{SUBJ DEF}) = - \\ (\uparrow \text{SUBJ}) \\ \neg(\rightarrow \text{ADJ}) \end{array} \right] \rightarrow (\uparrow \text{FORM}) =_c \text{FIH}_-$$

Similarly, in (33), the lexical entry of BE_{LOC} in inverted locative contexts, the optionality of *fih* in the structure is once again dependent on the dialect in question and may additionally be determined by the structure's TENSE value. Here BE_{LOC} is specified as taking a SUBJ of a PP c-structure category. The constraint stipulating the NP within the SUBJ PP to be [+DEF] is an important constraint that characterises PP SUBJS in Arabic. It differentiates them from predicative PP functions, in which the NP complement can be [+/-DEF]. (34) represents the lexical entry for the grammaticalised *fih* as employed in predicative structures (and beyond).

¹⁶The lexical entries do not make reference as to how agreement gets worked out. This will heavily depend on the variety involved. In non-default inflecting *kān* contexts, there is a canonical display of agreement with the SUBJ's CONCORD feature values. In the context of full agreement within inverted locative structures, however, then agreement in that context must be stipulated in the relevant lexical entry as involving agreement with the OBJ's CONCORD feature values, at least in the case of those varieties that still display full agreement with the *theme*.

¹⁷To account for the differences between locative predications and e.g., adjectival predications requires either the assumption that in the latter structures the copula is solely a feature-bearer and the adjective functions as the f-structure's PRED or that the copula similarly functions as the f-structure's head yet associates with (yet another) distinct subcategorisation frame (and hence, lexical entry). Instead of an OBL, the copula would take a PREDLINK, with the adjective functioning as the latter's head.

- | | |
|--|---|
| <p>(33) <i>kān: I</i> (↑ PRED) = ‘be_{Loc} <SUBJ, OBJ>’
 (↑ TENSE) = PAST
 CAT((↑ SUBJ), {PP})
 (↑ SUBJ OBJ DEF) = +
 (↑ OBJ DEF) = –
 ((↑ FORM) =_c FIH_–)</p> | <p>(34) <i>fīh: V</i> (↑ FORM) = FIH
 ((FORM ↑) MINUSR DEF) = –
 (↑ MINUSR)_λ⁻¹ =_c THEME</p> |
|--|---|

6 Conclusion

As I revisited predicative locatives in Arabic within the realms of LFG I presented arguments as to why locative predications may best be analysed distinctly from other vanilla counterparts. It adds to the LFG literature that treats canonical locatives as structures involving a SUBJ and an OBL. No distinction was made here between locatives with/without a copula. The analysis provided for canonical locatives has opened a much needed quest to tackle the analysis of locative inversions in Arabic. I have here solely provided initial grounds on the basis of which one can argue that we are indeed dealing with a predicative construction that must be intrinsically differentiated from its canonical counterpart. Evidence for the SUBJ function of PPs was provided via reference to the agreement facts, which I take to be a display of a mismatch between the highest thematic role in the structure and the highest GF ($\hat{\theta} \neq \widehat{GF}$), as well as the important raising facts. In challenging previous literature on Arabic when it came to the analysis of inverted locatives, I have demonstrated how NOM CASE in Modern Standard Arabic need not always be understood to align with a SUBJ GF. Rather, in this case and in similar copular and verbal constructions that take PP SUBJS, NOM-marking simply gets assigned to the next available nominal GF in the structure, thus non-canonically appearing on OBJ GFs.

Nailing down the analysis of Arabic locatives ends up having important ramifications on the grammar, when one considers the diachronic developments of existential and possessive structures out of locative predications. The analysis of inverted locatives here provides diachronic weight to Hallman’s (2020) synchronic account of BE possessives in Syrian Arabic. It in turn challenges previous typological literature that has solely stated that Arabic predicative locatives serve as precursors of (HAVE) possessives (by presenting *canonical* locative examples to illustrate their point). On the basis of the chained nature of the argument being developed here and concomitant with the analysis provided here for inverted locatives, it has specifically been *inverted* locatives that functioned as precursors to possessive structures, and the first to have developed were BE possessives. (HAVE counterparts only developed from BE ones later on). It is with this background that one can come to appreciate the edge that a given treatment may end up attaining, when the analysis of a particular structure is not solely viewed narrowly in and of itself, but rather informed by, and analysed as part of a tapestry of intertwined synchronic facts and diachronic developments within the grammar.

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