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# REMARKS ON MODERN STANDARD ARABIC CONSTRUCT STATE AND QUANTIFICATION

by

Mohammed Abuhaib

A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

in Linguistics

at

The University of Wisconsin-Milwaukee

December 2020

# ABSTRACT

REMARKS ON MODERN STANDARD ARABIC CONSTRUCT STATE AND QUANTIFICATION

by

Mohammed Abuhaib

The University of Wisconsin-Milwaukee, 2020
Under the Supervision of Professor Nicholas Fleisher

This thesis investigates the interpretations of genitive and quantificational forms that Modern Standard Arabic (MSA) unifies under a complex DP, namely Construct State (CS). Despite the linguistic differences between these phenomena, the PF form of this structure neutralizes all indicated types and their sub-types into a head-complement form (possessum-possessor or quantifier-domain restriction), where the whole structure's definiteness is recovered from the complement that is distinguished for this value overtly. However, the internal syntactic and semantic components such as the source of relations and definiteness value of the whole structure that contribute to the CS its various interpretations are always concealed at PF. This neutralization makes it hard to view the differences between CS types as well as the causes of their various semantic ambiguities. This project analyzes Nominal and Quantificational CSs of MSA to uncover their hidden syntactic and semantic factors that distinguish their semantic contributions. To approach these two forms, this thesis consists of four main discussion chapters.

Two of these chapters (2&3) are devoted to approach genitive nominals, and their syntactic and semantic aspects. Chapter (2) looks at (in)definiteness: marking, agreement (inheritance), and its interpretation on either component at LF. In this chapter, I argue that the Nominal-CS D head inherits its covert definiteness featural specifications from its complement whose definiteness is distinguished overtly. This inheritance takes place at the syntactic level via the operation of

syntactic agreement (following Pesetsky and Torrego, 2007 framework) which feeds the semantic interpretations of this form, regardless of some exceptional cases for this inheritance. Chapter (3) investigates the semantic ambiguities of a nominal CS. One type of the ambiguities categorizes a CS as possessive vs. modificational CS based on the relation between the head and the complement. Following Borer (2009), these interpretations are caused by the referentiality of the complement, which is associated with its syntactic category: a referential DP for the possessive type and non-referential NP for modificational type. Another ambiguity is caused by the relation between the nominals in the distinguished types contributed by Relator Phrase (RP) projection (cf. Den Dikken, 2006 and Ouhalla, 2011). The head of this projection denotes a free variable over contextual relations (possessiveness, agent, control, or other pragmatic relations) or its relation can be contributed lexically by the head noun when it is relational semantically. However, the lexical relation may or may not feed the RP projection depending on the context.

Regarding the quantificational side of the investigation, it focuses on quantificational determiners and their domain restriction (DR) nouns that form the quantificational construct state (QCS), in addition to some notes about scope taking ambiguities. Chapter (4) approaches the quantifiers *kul:* "every/each or all" *dʒami:ʔ* "all" *muʕðˤam* "most" *baʕdˤ* "some" and their DR nouns in CS. All the former quantifiers are restricted by definite plural DPs without partitive preposition, except for the distributive interpretation of *kul:*. For the latter, it has to be restricted by an indefinite bare noun. Regarding these issues, this chapter argues that quantifiers of Arabic are not syntactic determiners since they are distinguished for (in)definiteness overtly in non-CS structure or covertly in QCS. The account that is drawn for the quantifiers with definite DR proposes that they are partitive quantifiers whose partitive relation is established by a null PartP (partitive phrase) (cf.

Fehri, 2018). PartP allows them to quantify over parts of the individual sum denoted by their definite plural DR noun. On the other hand, the inherited definiteness on the quantifiers is semantically vacuous since the domain of quantification is restricted by the definiteness of DR noun. For the distributive interpretation of the universal *kul:* "every/each", its DR is a bare NP whose number contributes the (non)atomic granularity for distributivity rather than categorizing it as indefinite since this language lacks the indefinite determiner.

The following chapter shifts the discussion toward some notes on scope taking to examine the possibility of the covert inverse scope and inverse linking readings at LF in SVO and VSO word orders. For the inverse scope at clause-level, the findings of this chapter analysis suggest that the scope is fluid with respect to VSO order, while the SVO order shows some exceptions. The subject of SVO occurs in the left periphery as a topic or focus (Soltan, 2007; Albuhayri, 2019) where QR does not exceed (cf. May, 1977, 1985; Heim and Kratzer, 1998). Merely, a clitic left dislocated topic can freeze the scope by reserving wide scope interpretation, while a focused subject can show scope ambiguity due to its ability to reconstruct because it is a moved element to the left periphery. Regarding scope linking within DP, MSA allows this type of QR movement at LF, but, still the left periphery boundary is respected.

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To my parents,

my lovely wife,

my wonderful kids: Aljuhara & Meshary,

and my supportive brothers and sisters

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| **Adj** | Adjective |
| **Acc** | Accusative |
| **CS** | Construct State |
| **Def** | Definite |
| **Det** | Determiner |
| **DR** | Domain Restriction |
| **Du** | Dual |
| **ESG** | English Saxon Genitive |
| **Fem** | Feminine |
| **Foc** | Focus |
| **Gen** | Genitive |
| **Indf** | Indefinite |
| **Mas** | Masculine |
| **M-CS** | Modificational Construct State |
| **n** | Tanween (nunation suffix) |
| **Nom** | Nominative |
| **Obj** | Object |
| **P-CS** | Possessive Construct State |
| **Pl** | Plural |
| **Poss** | Possessive (Affixes) |
| **Q** | Quantifier |
| **Q-NP** | Quantified Noun |
| **QR** | Quantifier Raising |
| **Sg** | Singular |
| **Sub** | Subject |
| **Top** | Topic |
| **RP** | Relator Phrase |

# ACKNOWLEDGEMENTS

I was delighted when I wrote my name under the title of this dissertation. I said to myself: " Oh thanks God! I did it! I have succeeded! Finally, it is the end of a learning journey in a foreign country that has started in 2012. Now, it is time to go back home." After few minutes, I felt selfish because there are many people whom I want their names to be listed on this thesis title page even before my name due to their lasting positive contributions to my personal life first and this thesis accomplishment. I believe that I am incredibly fortunate to have those people in my life. I will take this opportunity to express my gratitude toward them for their extraordinary heroic deeds, and their valuable scarifies that inspired and encouraged me during the past exceptional eight years of my life.

First and foremost, I want to express my deepest sincere thanks to my academic advisor: Prof. Nicholas Fleisher, for his confidence in my abilities, unwavering support, constant encouragement, and patience. I am indebted to Prof. Fleisher for his academic guidance and for being a brother-like to me. I believe that this work would not have been possible without his continued feedback, and the countless meetings to discuss this thesis arguments and analyses.

I met Prof. Fleisher in September 2015 when I took his Syntax (1) class. It was my first class at UWM. During this course, I have noticed that this course is different from other courses that I have taken before due to his discipline, knowledge, distinguished way of teaching, and encouragement toward research and critical thinking. Generally, these are the main characteristics that every graduate student is looking for in his academic advisor. In that course, I knew that he is my advisor. His Semantics (1) course is the point that switched my research interests from syntax to semantics and syntax-semantics interface. After that course, I went to his office to ask him to be my academic advisor. He accepted this request with no hesitation. I really appreciate that.

Despite his professional advising, I truly enjoyed his classes. Most of my PhD courses are courses that he teaches. Further, whenever I had an opening in my schedule, I audited one of his semantics classes, even though I have taken that course before. He welcomed me in these classes because he knows how much I enjoy learning semantics. Another remarkable characteristic of his is that he is available whenever I needed his assistance, despite his full schedule. In addition, the success of his students is a priority for him. I really do not forget that when he was on a sabbatical leave overseas in 2017, he generously offered me an Independent Reading course online to fulfill the program course work requirements, despite his busy time and the timing zone differences. This is one example of many others that show that he is willing to support and give under any circumstances.

As any PhD student whose life experiences (non-)academic up and down moments (especially in the pandemic crisis) Prof. Fleisher's support, suggestions, and comments always guided me to overcome any difficulty. Again, thank you Prof. Fleisher for the great and professional advising experience that I had during my studying period at UWM. I am really proud to be one of your students. Words are not enough to express my gratitude for this wonderful experience.

Another person to whom I would like to extend my deepest gratitude is Prof. Hamid Ouali. Prof. Ouali's courses are a great source for learning Arabic Syntax. I was lucky to take his seminar course in Arabic Syntax. Beyond that course, Prof. Ouali never wavered in his support and assistance whenever I had a syntactic problem with Arabic structures. His office is always open for me with(out) appointments to discuss any idea. His constructive suggestions and insightful comments helped me to form this thesis syntactic arguments. Further, I thank him for serving on my dissertation defense committee and all other program milestones committees.

Special thanks to Prof. Garry Davis and Prof. Usama Soltan for agreeing to serve on this thesis defense committee during this extraordinary pandemic situation. First of all, it is an honor for me to have them as committee members. Secondly, I appreciate the time that they spent reading my dissertation, in addition to their useful comments, constructive suggestions and insightful questions during the defense.

I am extremely grateful to the former UWM faculty member Prof. Tue Trinh. He is the second person who inspired my research interests toward semantics. He welcomed my questions and meeting requests, in addition to the useful readings and the constructive advice that he suggested to me. Also, many thanks go to the distinguished professor Fred Eckman for serving on my preliminary-exam committee and this dissertation proposal hearing committee. Additionally, I would like to extend my sincere thanks to my professors in the linguistics department: Prof. Hanyong Park, Prof. Anne Pycha, Prof. Jae Yung Song, and Prof. Sandra Pucci. I learned and benefited tremendously from their areas of expertise in their classes. Thanks to the linguistics department staff member: Sharon Geibel for her tremendous help and taking care of administrative details.

I would like to take this opportunity to thank every linguist whom I learned from and cited his/her work in this thesis, especially those who inspired my arguments and analyses: Irene Heim, Angelika Kratzer, Barbara Partee, Gennaro Chierchia, Lucas Champollion, Tanya Reinhart, Chris Barker, Abdelkader Fassi Fehri, Elabbas Benmamoun, Gabi Danon, Lisa Matthewson, Anastasia Giannakidou, and Anna Szabolcsi. These people's works are very influential in the field and reading their works expanded my knowledge. Thanks should also go to Ahmed Alshihri, Yahya Aldholmi, Salem Albuhayri, Turki Alwahibee, Wael Alghamdi, and Mubarak Alfehailah for discussing and providing judgments on this dissertation data.

Tremendous thanks to my colleagues and friends here at UWM: Yahya Aldholmi (former neighbor in Shorewood), Salem Albuhayri, Turki Alwahibee, Bader Alharbi, Salman Albardi, Yasser Albaty (all the previous friends became doctors before I do), Saad Alshahrani, Abdullah Alsubhi, Abdulrahman Aljutaily, Nawaf Alzaharni (hopefully I congratulate them soon). The presence of these people in my life brought joy and happiness. They filled a great gap in my life that is caused by being away from my family and friends back home. Since day one at UWM, I was blessed to have two special brother-like people: Salem Albuhayri and Turki Alwahibee (my M.A. friend). We formed a wonderful study and friend trio in sharing classes, doing homework, and assisting each other in research. I cannot forget all those nights that we spent working hard at the library, in cafes, and in Salem's apartment. We worked, shared knowledge, laughed, complained, reviewed each other work and encouraged each other. I truly enjoyed every moment in the company of these two fellows.

I would like to take the chance to thank my scholarship sponsor Imam Muhammad Ibn Saud Islamic University, represented by the Cultural Mission of the Royal Embassy of Saudi Arabia, for the full scholarship and the generous fund that helped my wife and me to achieve our dream of pursuing our education in the US. Further, I am thankful to my supportive friends: Mubarak Alfehailah, Mubarak Al-asfoor, Abdulrahman Al-Mahfood, Naif Aldikkaan, Omar Alzamil, Fahad Alsubait, Mansour Altamimi, Abdelaziz Altamimi, Mubarak Al-Shukarah, Abdelaziz Al-Izzi, Mohammed Almutlak, Ali Alameri, Wael Alghamdi, Ali Al-Ghamdi and all other friends in Saudi Arabia. Among my friends, I am indebted to my closest friend Mubarak Alfehailah. Mubarak, as always, is a great wonderful person who cares for me as a brother. He always keeps in touch and never wavers in his support. Another friend who deserves many thanks is my loyal childhood friend Mubarak Al-asfoor. Mubarak has been a friend of mine for many years (20 years

approximately). He has never let me down for all of these years, and our wonderful friendship has never changed.

I am deeply indebted and grateful to my parents: Saleh Abuhaib and Aljuhara Al-mufaireej who taught me that education and learning are the most important components of life. Words are not enough to thank them for their continuous love, emotional care, constant encouragement, and sincere prayers for my little family and me. I do not know how to express in words how much I love them. I admit that my heart is broken and full of grief for the loss of my lovely mother and my kind older brother Ahmed Abuhaib who both passed away, in 2011. However, I am proud today because I fulfilled our dream by earning a PhD degree. I would also like to extend my deepest gratitude to my supportive brothers and sisters: Hanaan, Ibtisaam, Abdullah, Abdulhameed, Abdulmohsen and Bander Atulaihi (my brother-in-law). Indeed, this thesis would not have been possible without the support of all my family members. I love everyone in my family, but some of them have remarkable contributions to my life that I have to acknowledge. My sister Ibtisaam is a second mother to me and I am extremely lucky to have a sister like her. I am thankful to Abdullah for his valuable advice and endless support. Special thanks to my exceptional brother Abdulmohsen who always stands by me. In spite of being a wonderful friend of mine, I am indebted to him for the unforgettable sacrifices that he made for me. Lastly, I thank him for his daily calls and constant encouragement. Many thanks go to all my nephews and nieces.

I am truly blessed with a great wife and two adorable little kids. My wife, Alhanouf has been an incredible source of support for me since the first moment that I have decided to pursue my graduate education. During this process, she has made countless sacrifices to help me to get to what I have become today. She always stood by me through all of my travails, my absences, my fits of pique and impatience. Moreover, we spent, in this journey, eight hard years away from our

beloved ones back whom. She has hidden how much she missed her parents because she does not want to disturb me through all of these years. Even though she is a full-time undergraduate student, she never refrained from providing care and love for my kids and me. Alhanouf, I am really thankful for everything you gave us. I am indebted to you for the rest of my life. Along with her, I would like to thank my adorable kids Aljuhara and Meshary, also I apologize to them for all the moments that I was away from them working hard to achieve this accomplishment. I know how hard it is to be a child of a busy father and I really appreciate your patience. Again, thank you my little family. Without your patience and countless support, I doubt that I would be in this place today.

# CHAPTER (1) Introduction

## 1.1 Introduction

DPs in Arabic and Semitic languages have two forms. The first form is a simple form that consists of a determiner and a common noun. The second form is a complex genitive form which consists of two DPs in that one DP is embedded under the other. The latter form is dubbed Construct State (CS; also sometimes called annexation). The CS structure is a complex DP that is mostly used to establish covert semantic relations between a lexical element such as a nominal, a deverbal noun, an adjective or a quantifier and another noun within this complex DP. The covert relations between its various components are possessiveness, partitivity, modification, and argumental relation. Syntactically speaking, the CS consists of two components: a head (possessum/ modified nominal/whole) and a complement (possessor/modifier/part of) that behave as a one constituent. Only the complement noun, the second element, is morphologically contrasted for (in)definiteness and that value is inherited by the whole structure, including the head. Regarding the case of its components, the second element is assigned a structural genitive case, while the head bears the case of the whole DP assigned by any case assigner in a sentence.

## 1.2 CS Data

After introducing the main aspects of this structure, this project scope of investigation targets two different kinds of CS in Modern Standard Arabic (MSA), namely the nominal and quantificational CSs. The distinction between the two types rests on the first lexical item that heads this structure, a noun or quantifier. The aim is to discover these types, and understand their structural and semantic aspects that contribute to their interpretations at LF. Let us first consider the targeted examples of CSs that confirm the given aspects in the introduction:

## A. Nominal CS

**Definite:**

(1) kita:b-u at$^{ʕ}$-t$^{ʕ}$a:lib-i
book-Nom the-student-Gen
"the student's book"

**Indefinite**

(2) kita:b-u t$^{ʕ}$a:lib-in
book-Nom Indf-student-Gen
"a student's book"

Examples (1) and (2) represent the definite and indefinite nominal CS DPs with a null relation. As shown, the first example has a definite CS since the complement *at$^{ʕ}$-t$^{ʕ}$a:lib-i* "the student" appears with the definite determiner prefix /al-/[1] that represents the whole structure definiteness value, in addition to the genitive case marking. Similarly, the following CS is the indefinite counterpart where the complement of that structure is a bare noun[2] *t$^{ʕ}$a:lib-in* "a student". Being bare is a morphological indication for indefiniteness in this language. With respect to the head in both examples, it remains intact due to the reason that it inherits the (in)definiteness covertly. The main observation that makes this structure puzzling is the lack of an overt form of the relation, which is mostly represented by different forms of prepositions in non-CS DPs, and the whole structure covert definiteness value. According to the given translations, the previous examples represent one type (possessive) of many relations that this complex nominal DP can express depending on the context. For instance, in other contexts, examples (1) and (2) can be interpreted differently as "a/the book that is written for or by a/the student". Based on this, we can see that the null relation between nominals is affected by the context since the overt form of the relation is absent.

[1] In /al-/ , the lateral consonant assimilates to the following consonant when it is +coronal.
[2] Arabic has only a definite determiner because indefinites in this language are bare nouns. So (in)definiteness is contrasted in by the absence or the presence of the definite determiner.

In addition to the pragmatic context, there is another syntactic factor that impacts the relation between nominals within a CS. This factor is the syntactic category of the CS complement and its relation to the head. In the former examples, we have witnessed that the whole CS and its complement are categorized as DPs. However, other examples of the CS share the same PF form in that the complement is distinguished morphologically for (in)definiteness, but this morphological distinction represents the definiteness value of the whole structure and not the complement itself:

(3) a. qaraʔt-u madʒal:at-a al-awla:d-i Possessive/modificational
read-I magazine-Acc the-boys-Gen
"I read the boys' magazine."

b. ʔadˁaʕ-tu dʒwa:z-a as-safar-i Compound
lost-I possible-Acc the-travel-Gen
"I lost the passport."

In example (a), the CS is ambiguous, depending on how its complement is interpreted. When the noun *al-awla:d-i* "the boys" is referential, we get the possessive relation or its variants. However, if that complement is not referential, it becomes a modifier for the head *madʒal:at-a* "magazine" as "the magazine that is written for/about boys". Accordingly, we get the modificational reading of the CS where the complement modifies the head. This modification does not allow us to interpret the definiteness on the complement like the possessive one. This implies that the complement may not be considered syntactically a DP despite the PF uniformity and the definiteness marking. The same issue is present with respect to CS compounds in (b). The CS *dʒwa:z-a as-safar-i* "passport" is a nominal compound with an idiomatic interpretation that appears in a complex genitive DP form. If we compare the compound CS to the possessive one in (a), we can see that the PF form does not distinguish either type. Again, the complement bears the definiteness marking, while that definiteness value is not interpreted on that nominal. From these examples, it can be noticed

that the CS can have different interpretations depending on how its complement is viewed syntactically (DP, NP, or N) (Borer, 2008). However**,** each nominal CS type is masked by the PF uniformity. To summarize, definiteness interpretation and the CS's covert relations are the main causes of the nominal CS interpretation ambiguity.

## B. Quantificational CS

Besides being a genitive structure for nominals, a CS is the structure that combines quantifiers such as *kul:* "every/all", *dʒami:ʕ* "all", *baʕdˤ* "some", and *muʕðˤam* "most" with their Domain Restriction nouns (DR henceforth). In this form, each of these quantifiers can be categorized as a head of CS that behaves syntactically as a modifier of its DR DP that occurs in the CS complement position (cf. Arabic pre-nominal adjectives[3]). Another aspect of QCS is that instead of restricting quantifiers with predicates of type <e,t> as the case for English, these quantifiers are followed by nouns that are distinguished for definiteness from which the quantifiers inherit their definiteness specifications:

(4) a. dʒa:ʔa kul:-u / dʒami:ʕ-u / baʕdˤ-u / muʕðˤam-u atˤ-tˤula:b-i
came all-Nom all-Nom some-Nom most-Nom the-students-Gen
"all / some / most of the students came."

b. dʒa:ʔa kul:-u tˤa:lib-in
came every-Nom Indf-students-Gen
"every / each student came."

c. al-kul:-u / al-dʒami:ʕ-u / kul:-un / al-baʕdˤ-u / al-muʕðˤam-u
the-all-Nom the-all-Nom Indf-every-Nom the-some-Nom the-most-Nom
"all / every / some / most"

[3]An example of adjectival CS can be shown the following:
a. uħib-u **tˤai:b-a** **al-ʔaxla:q-i** (prenominal-adjective)
like-I **good**$_{-Acc}$ **the-morals**$_{-Gen}$
" I like the good morals."
*tˤai:b-a al-ʔaxla:q-i "good morals"* is an adjectival CS where the adjective with a covert definiteness value precedes its modified noun. that noun is marked with a genitive case. See Fehri (1999) for more discussions.

In (a&b), each quantifier can be categorized as a head of CS. Like CS nominal heads, they inherit the (in)definiteness of their complement syntactically. Hence, these quantifiers may not be considered determiners syntactically, but they can be categorized as adjectives distinguished for indefiniteness and case as in (c). Since they are not syntactic determiners, MSA requires these quantifiers to head a CS structure. Regarding the (in)definiteness of the DR that distinguishes (a) from (b), all the quantifiers in (a) require their DR to be a definite plural noun except for *kul:* when it is interpreted as a strong distributive universal quantifier "every or each" as in (b). This strong distributivity requires the DR to be indefinite and mostly singular. To summarize the given observations, quantifiers are not syntactically determiners since they are marked for (in)definiteness and case. They and their DR share the same (in)definiteness value. The universal quantifier *kul:* is distinguished for distributivity via indefiniteness and the number of its DR.

## 1.3 Problems and Claims

The main problem of the CS syntactic configuration is that it is the structure of many different syntactic phenomena like genitive nominals with different forms and relations, quantifiers and their domain, nominalized verbs and their argument, and some adjectival modification[4]. Each of the indicated CS types requires a different relation between its components, and definiteness can be interpreted on either element or on both. What makes this structure puzzling is its PF uniformity that masks many syntactic and semantic aspects. Accordingly, this PF masking uniformity unifies the indicated phenomena under one form, namely head-complement with no overt relation and one overt definiteness value. What questions this PF uniformity is the various semantic interpretations of each CS type in different contexts.

[4] Nominalized and adjectival CSs are beyond the scope of this enterprise.

The problems that will be approached through this dissertation's chapters deal with MSA CS and quantification. More specifically, the scope of this thesis investigation approaches the various semantic interpretations of the nominal and quantificational CSs whose syntactic and semantic aspects are masked by this structural PF uniformity, in addition to some scope taking issues. The goal is capturing the hidden or the covert factors that are only present in the narrow syntax and LF levels to provide logical forms that represent the various readings of the targeted nominal and quantificational CS. To approach this problem, the discussion of the upcoming chapters will look at the nominal and quantificational CS with respect to the following four points:

## I. (In)definiteness Inheritance and Interpretation

The starting point for approaching a DP structure is its syntactic and semantic (in)definiteness. A well-known argument about genitives' (in)definiteness is that it is mostly inherited from the complement (Abney, 1987), as is the case for English Saxon Genitives (ESG) and Semitic CS (Fehri, 1993, 1999, 2012, 2018; Benmamoun, 2000; Borer, 1996, 1999, 2009; Danon, 2001, 2008; and many others) because the head of the structure is not distinguished for (in)definiteness overtly like its complement. What concerns us with respect to Arabic CS is how and when the inheritance of this structure takes place: in the narrow syntax or at LF? What is the mechanism that explains the definiteness spreading? Does the syntactic and semantic definiteness go hand in hand with respect to all the syntactic distributions of the CS DP? To answer these questions, several analyses of CS definiteness marking and inheritance will be surveyed to provide an account for this issue. The claim that will be suggested for this issue is that this inheritance takes place at the syntactic level. To explain this inheritance, the agreement framework of Pesetsky and Torrego (2007) will be implemented to show how to account for definiteness marking, inheritance, and featural interpretations. The formed syntactic account will be revisited semantically by looking at (in)definite CSs and their interpretations at LF.

## II. Possessive vs. Modificational CS

As indicated in the introduction, CS can be possessive, modificational or compound depending on the syntactic category of its complement (DP, NP, N) (Borer, 2009). In addition to these interpretation types, there is another type of ambiguity that is caused by the semantics of relational nouns that head this genitive structure. When a relational noun heads a CS, the relation between the head and its complement can either be determined by that noun or by the context as follows:

(5) dʒaʔa mʕl:im-u ridʒa:l-in
came teacher-Nom Indf-men-Gen
"men's teacher came."

a. **Possessive CS (Free vs. Lexical R):**
   i. A teacher of some men. Possessive-CS + Lexical R
   ii. A teacher who works for some men. Possessive-CS + Free R

b. **Modificational CS (Free vs. Lexical R):**
   iii. A teacher who teaches men only. Modificational-CS+ Lexical R
   iv. A teacher who likes to work for men only. Modificational-CS + Free R

The above shows four possibilities for interpreting a CS in various contexts, depending on the source of the relation as well as the complement syntactic category (DP vs. NP). The main questions for these interpretations are: how are these interpretations distinguished syntactically and semantically? What is the element that shifts or contributes the relations in either case? Regarding this data, I argue that there is a Relator Projection (RP) (cf. Den Dikken, 2006; Ouhalla, 2011) that is responsible for these ambiguities. This projection relation can be determined contextually or lexically. In addition, the selection of the complement (DP or NP) is also associated with this projection to distinguish the modificational from possessive CSs.

## III. Quantificational CS and DR

Another issue that will be investigated is quantification in MSA. There are two sides to this issue: the quantifiers and their DR within CS, and the scope of the quantifiers. Regarding the former, it has been highlighted previously that a quantifier and its DR in a CS behave differently from their English counterparts in that they are distinguished for (in)definiteness and they are restricted via DPs rather than predicates. This behavior raises questions about the interpretations of these quantifiers: How do they combine compositionally with the DR? What is the interpretation of definiteness on either element? Another issue that requires investigation is the distributive and the collective interpretations of the universal quantifier *kul:*. As stated for examples under (4), the distributive and collective construals of this quantifier are determined by the type of the DR noun. For the collective interpretation, the DR is a definite plural noun. However, the distributive counterpart requires the DR to be indefinite. On the other hand, English distinguishes the two universal interpretations via a lexeme that contributes distributivity *every/each* or collectivity *all*. Thus, what distinguishes these interpretations in MSA?

The main claim that will be stated about the issue of the targeted quantifiers and their DR proposes that a quantified CS (QCS) structure differs with respect to the definiteness of its DR. If its DR is a definite plural noun, there is a null Partitive Phrase (PartP, cf. Fehri, 2018) between the quantifier and its DR. The contribution of the projection is to allow the quantifier to quantify over parts of its DR. Put differently, the DR noun is a complement of the PartP, which denotes a function of type <e,<e,t>>. This projection ensures that the quantifier combines with a predicate at LF to solve the semantic type mismatch problem. Consequently, the output of PartP is a set with a variable that ranges over parts of the sum individual that is contributed by the definite plural. For an indefinite DR of the distributive universal quantifier on the other hand, it will be treated as an NP of type <e,t> that combines with this quantifier directly. Regarding the definiteness value on the

quantifier, it is going to be considered a semantically vacuous marker that is inherited from the DR with no value at LF. Lastly, with regard to the distributivity vs. collectivity of the universal *kul:,* it is associated with the number of the DR that determines the distributivity rather than (in)definiteness.

## IV. Scope Taking

The discussion of MSA quantification will proceed to look at the issue of scope taking. Generally, Q(uantified)-NPs scope taking is a semantic and syntactic issue that has been a subject of many works (May, 1977, 1985; Beghelli & Stowell, 1997; Heim and Kratzer, 1998; and many others). The main argument that they propose is that a quantificational sentence with two Q-NPs or more is subject to scope ambiguity due to different scope takings of its Q-NPs which renders different LFs and interpretations as follows:

(6) a. **A girl** admires **every man.**
b. **A man** from **every city** participated.

The examples above are ambiguous, depending on where the Q-NPs are interpreted. The first type of reading is the surface scope reading, where the Q-NPs (c-command) order at LF matches the PF (surface scope). The other type of reading is known as the inverse scope reading, as in (a) or inverse linking reading as in (b), where the order of the quantifiers is reversed at LF via covert movement known as quantifier raising (QR) (May, 1977, 1985). For the latter type of reading, the object universal Q-NP c-commands the existential which renders the variation of girls with men as in (a) or the variation of men with cities as in (b).

Cross-linguistically, Beghelli & Stowell (1997) Szabolcsi (1997b) Ionin, (2001) Bobaljik & Wurmbrand (2012) and Kiss & Pafel (2017) propose that languages with a flexible word order (such as Hungarian, Japanese, Russian and German) may not encounter the indicated QR inverting at LF (scope rigid/frozen). The inverse scope readings require an overt syntactic movement to derive such readings or the scope ambiguity is allowed in one order and not the other. Accordingly, where does MSA lie based on the given generalizations about scope taking? If it belongs to either category (scope fluid or rigid), does it extend to its sentential and complex DP (CS) argumental Q-NPs? Given that this language has two word-orders (SVO and VSO), the claim that will be drawn regarding the inverse scope readings suggests that this language is partially rigid because SVO subjects appear in the left periphery of the clause (Soltan, 2007; Albuhayri, 2019). Therefore, Q-NPs in the left edge of the clause may encounter some scope rigidity due to the effect of topicalization. On the other hand, the inverse linking of an embedded Q-NP within a complex DP (CS or object of PP) is possible in either order.

## 1.4 Previous Works and Significance

Initially, the structure of the CS attracted classical Arabic grammarians. In their works, they gave a descriptive grammatical analysis for this structure by suggestions that capture the (in)definiteness agreement between its constituents as well as the genitive case of its complement. Later, in the 1980s approximately, syntacticians started entertaining the CS, mostly the nominal one, by applying Chomskyan syntactic theories (Benmamoun 2000; Borer 1999, 1996; Danon, 2008; Mohammed, 1988; Siloni, 1997; Ritter, 1988, 1991; Fehri, 1993, 1999, 2012, 2018; Kremers, 2003 and many others). The syntactic theories did not focus on Arabic only, but they were extended to Hebrew since this phenomenon is part of Semitic languages' grammar in general.

Regarding the semantics of the nominal CS, Dobrovie-Sorin (2000) and Heller (2002) approached the semantics of CS by looking at Hebrew CS while Ouwayda (2012) considered the same phenomenon in the Lebanese dialect of Arabic. These former proposals can be categorized into two extremes: individual approach vs. predicate approach. The first extreme is represented by Dobrovie-Sorin and Heller's proposals, which suggest that a CS denotes an individual of type e rather than a predicate. More explicitly, the head of the CS denotes a function of type <e,e> that allows it to compose with its complement. In the second approach of Ouwayda (2012), the CS as a whole has to be analyzed as a predicate which denotes a property of type <e,t> that is subject to be modified by adjectives or to be a complement of, determiners, and quantifiers, in contrast to what has been suggested by Dobrovie-Sorin and Heller. Overall, the works focused on the possessive relation of this structure, but we need to consider all the relations presented previously in depth to discover the semantics of this type of structure.

On the other hand, quantificational CSs and quantifiers of Arabic received minimal attention in the syntactic and semantic literature. In most cases, quantification is discussed as a side topic to support findings about DP structures (Fehri, 1999), pronominal binding (Benmamoun, 2000) and adjectival interpretations (Hallman, 2016). Other works limit their discussions to one or two quantifiers to approach an aspect of quantification. For instance, Benmamoun (1999) and Shlonsky (1991) looked at the issue of floating quantifiers of Arabic and Hebrew. Their mean analyses target the syntax of *kul:* (collective universal "all") when it floats with respect to clause structure. However, the recent works of Fehri (2018, 2020) looked at this phenomenon in Arabic syntactically and semantically, but still, there is a need for more proposals to understand Arabic quantification.

Regarding the significance of this thesis, it contributes to both the syntax and semantics of Arabic generally, and MSA specifically, by providing accounts for its CS and quantification. These accounts focus on giving explanations for structural patterns and semantic interpretations of the targeted types of CS. This study can be considered a continuation of the surveyed works to understand CS syntax and semantics. Nevertheless, what distinguishes it from other proposals is its closer look at the CS definiteness interpretations, relations, and semantic ambiguities. To the best of my knowledge, these aspects have not been approached under one enterprise that discusses how they impact the interpretation of a CS . On the other hand, Arabic quantification is a syntactic and semantic area that is studied poorly. I aim to contribute some proposals and generalizations that may explain some facts about quantifiers, domains, and their scope.

## 1.5 Research Questions

i. What is the difference between nominal and quantificational CS syntactically and semantically? What are the internal factors that contribute to their interpretations?

ii. How can the (in)definiteness inheritance of the CS be accounted for syntactically and semantically? What determines its interpretation on either component at LF?

iii. What are the factors that cause the ambiguity of interpreting a nominal CS? How can these factors be reflected on LF configurations and truth conditionally to distinguish each reading?

iv. What is the semantic contribution of (in)definiteness on MSA quantifiers and their DR? What distinguishes the collective from the distributive interpretations of the universal quantifier *kul:*?

v. Is MSA a scope fluid language that allows QR to invert the Q-NPs scope in a quantificational sentence at LF? Are the inverse scope and the inverse linking available readings without a syntactic movement?

## 1.6 Framework and Theoretical Assumptions

The semantic investigation of this thesis relies on a syntactic basis that contributes the needed LFs for interpretation. Therefore, the discussions and argumentations of the upcoming chapters build on a combination of Heim and Kratzer's (1998, H&K henceforth) semantics and Chomsky's generative syntactic theories of language (mostly adopting the Minimalist Program, 1995, 2000, 2001, 2005, 2015).

### 1.6.1 Semantics

For the semantic framework, this work adopts H&K's (1998) semantics following Frege. The system of this semantic theory computes the meaning of a sentence from its minimal syntactic components. When any natural language expression (or a syntactic configuration) is interpreted via this system, it will be an input for interpretation function ⟦ ⟧ that maps or assigns this fragment to its semantic interpretation (extension). For any expression α, ⟦α⟧ provides the denotation or the extension of α in the formal metalanguage. Following this framework, I assume that the semantic types of the formal interpretations are developed from the basic semantic types: e for individuals and t for truth values, in addition to any combinations of these types form complex semantic types (or functions) for different denotations of lexical items: <e,t>, <e,<e,t>>, or <<e,t>,t>.

When a syntactic form is transferred to the LF interface, the denotations of its nodes are computed based on the following steps:

i. If α is a terminal node, ⟦ α ⟧ is specified in the lexicon

ii. If α is a non-branching node, and β is its daughter node, then ⟦ α ⟧=⟦ β ⟧

iii. If $\alpha$ is a branching node, {β , γ} is the set of $\alpha$'s daughters, then ⟦ α ⟧ is the output of the semantic rule that compute ⟦ β , γ ⟧ denotations.

The system computes the meanings of the sub-trees (phrases & lexical items) to derive the truth condition of the mapped sentence based on the following rules:

i. **Functional Application (FA)**

If ⟦ α ⟧ is a branching node, {β , γ} is the set of $\alpha$'s daughters, and ⟦ β ⟧is a function whose domain contains ⟦ γ ⟧ then ⟦ α ⟧=⟦ β ⟧ (⟦ γ ⟧)

ii. **Predicate Modification (PM)**

If ⟦ α ⟧ is a branching node, {β , γ} is the set of $\alpha$'s daughters, and ⟦ β ⟧ and ⟦ γ ⟧ are both in $D_{<e,t>}$ then ⟦$\alpha$⟧ = λx. ⟦ β ⟧(x) = ⟦γ⟧(x)=1

iii. **Predicate Abstraction (PA)**

If ⟦ α ⟧ is a branching node whose daughters are β and γ, where β dominates only a numerical index i, for any variable assignment a, $⟦ \alpha ⟧^{a} = \lambda x. ⟦ \gamma ⟧^{a\ x/i}$

Lastly, I follow Link's (1983) proposal in that the domain of individuals $D_e$ forms a complete join semilattice that is closed under individual-sum (i-sum) relation which is partially (mereologically) ordered. According to this theoretical assumption, the singular individual *John* (j) and the conjunction of *John and Mark* (j+m) or *the boys* both are of type e semantically where the singular is an atomic individual, while the conjunction and the definite plural denote a non-atomic sum. To sum up, These are the essential components of our semantic framework for now. As the discussion develops in later chapters, several semantic principles are going to be developed and new ones will be introduced.

### 1.6.2 Syntax

H&K (1998) propose that their semantic system applies to syntactic structures formed by syntactic computations, following the Chomskyan generative theories about language and the syntax-semantic interface that emerged in the late sixties. According to Chomsky's more recent (1995, 2000) assumptions about the language faculty, the language cognitive system (lexicon and syntactic computations) forms the sentence derivation that pairs sound and meanings to feed language performance external systems, namely the articulatory-perceptual system A-P and the conceptual-intentional system C-I. The interaction between the cognitive system and the latter systems renders

double interfaces: Phonetic Form (PF) and Logical form (LF). This concept is assumed in all of Chomsky's works (Government and Binding, Principles and Parameters, Minimalist Program) with different updates.

For the syntactic side of the upcoming argumentations, I follow Chomsky's theoretical assumptions in developing syntactic derivations and argumentations. More specifically, the constructed derivations mostly rely on the implications of the Minimalist Program (1995, 2000, 2001, 2005, 2015). Following Chomsky, I assume that syntactic derivations are formed by three basic operations: Merge, Move, and Agree:

**I. Merge**

Merge is assumed to be a recursive syntactic operation that puts two syntactic objects together to form a new category. "The indispensable operation of a recursive system is Merge (or some variant of it), which takes two syntactic objects α and β and forms the new object γ = {α and β}" (Chomsky, 2001:3). For instance, merging D with NP will provide the syntactic category DP: [DP[D][NP]] (Abney, 1987). The exemplified operation is known as an external merger where the derivation picks two elements (determiner and noun) from the lexicon (Numeration) to form the new syntactic category.

**II. Move**

Move (or move-α) is a displacement of a syntactic XP from its base position to the Spec of another projection HP in the derivation, leaving behind a null copy (or a trace as in earlier theories). Chomsky (2005:7) considers this movement as an internal merger since the moved element remerges from a lower position to the Spec of a higher projection in the derivation. Regarding the dichotomy of movements, they are categorized as A or A' depending on the landing site of the moved XP and the valued features of the head H. For example, the subject movement to Spec TP

is an A movement, while Wh-word, focus and topic movements to Spec CP are A' (Chomsky, 1995).

**III. Agree**

According to Chomsky (2001, 2000), agree is a syntactic operation that takes place between two syntactic objects: probe and goal. The probe is a head H that bears the un-interpretable unvalued feature(s) **uF [ ]** that has to be valued**,** while the active goal is an XP in its c-command[5] domain that has the interpretable valued counterpart **iF [val]**. The probe will look down on its domain for a goal that has the valued counterpart of its unvalued features to value its unvalued feature **uF [ ]** by copying the specifications of the goal feature. If the head has an EPP feature, the goal XP moves to Spec HP to satisfy this feature requirement. This operation can be exemplified by the agreement between T and subject DP for φ-features to obtain subject-verb agreement where these features are interpreted only on DP and not on T.

Overall, adopting the above syntactic framework and theoretical assumptions is necessary to generate semantic logical forms. Overall, this work may not challenge the syntactic works that looked at CSs by providing detailed syntactic analyses for this structure. However, it attempts to generate syntactic configurations for the nominal and quantificational CSs which are interpretable and which distinguish their various semantic interpretations.[6]

## 1.7 Outline of the Thesis

The thesis consists of six chapters. Chapter (2)'s discussion is directed toward syntactic and semantic (in)definiteness of the nominal CS, and its components. In chapter (3), the nominal CS

[5] C-command: a category α c-commands β if α does not dominate β and every γ that dominates α dominates β (Chomsky, 2015:31).

[6] In the upcoming presentations, I may abstract from giving detailed syntactic structures for the issue in hand as well as some distinctions between MP and earlier theories of Chomsky such as traces vs. copy movement, EPP vs. Labeling or any other updates.

is going to be reconsidered by differentiating the types of CS based on the relations between nominals (possessive, modificational, compound CSs). Chapter (4) is designated to discuss the issue of QCS. In this chapter, the quantifiers and their DR are going to be approached. Lastly, chapter (5) presents some issues with respect to scope taking. Lastly, chapter (6) summarizes the arguments and findings of the previous chapters and provides guidelines for future work.

# CHAPTER (2) Construct State (In)definiteness

## 2.1 Introduction

Since this project is directed toward a DP form in MSA, the starting point for approaching this topic is by considering its (in)definiteness. In the introductory chapter, we have witnessed that a CS can be (in)definite based on the overt (in)definiteness value of its complement, which extends to the whole DP. The task of this chapter is to have a closer look at the interactions of (in)definiteness and CS DPs from syntactic and semantic perspectives. Addressing this aspect is essential to achieve the goal of this enterprise.

When it comes to definiteness contrast in Arabic, the presence and absence of the prefixal definite marker distinguishes (in)definite nouns:

- **Definite:**

(1) al-kita:b-u
the-book-Nom
"the book"

- **Indefinite**

(2) kita:b-un
Indf-book-Nom
"a book"

Following the given generalization, the noun *kita:b* "book", in (1), is definite because of the presence of /al-/ while the same word, in (2), is indefinite due to the lack of the definite marker. Note that indefinite nouns mostly appear with an /-n/ suffix, but this cannot be considered an indefinite marker due to its attachment to definite nouns[7]. In contrast to simple DPs, the CS definiteness is

[7] This issue is going to be considered later.

distinguished by the presence or absence of the indicated definite marker in its complement, whose definiteness value is inherited by the whole structure as follows:

- **Definite:**

(3) kita:b-u **atˤ**-tˤa:lib-i
book-Nom **the**-student-Gen
"the student's book"

- **Indefinite**

(4) kita:b-u tˤa:lib-in
book-Nom Indf-student-Gen
"a student's book"

The CS in (3) is definite due to the definiteness of its complement that is represented by the /*al-*/ in *atˤ-tˤa:lib-i*, while the one in (4) is indefinite due to the absence of the definite marker. To sum up, the above represents the basic grammatical assumptions about (in)definiteness marking in Arabic. The main points that this chapter approaches are the following:

- (In)definiteness marking and its interpretation at LF
- (In)definiteness inheritance of CS and where it takes place
- Explaining the mechanism that accomplishes this inheritance
- (In)definiteness inheritance vs. syntactic and semantic (in)definiteness
- (In)definite CS LF and compositionality

## 2.2 Syntactic (In)definitenss

The starting point for the (in)definiteness discussion is simple nouns. The upcoming analysis that is given to this structure is going to be developed to account for its complex counterpart.

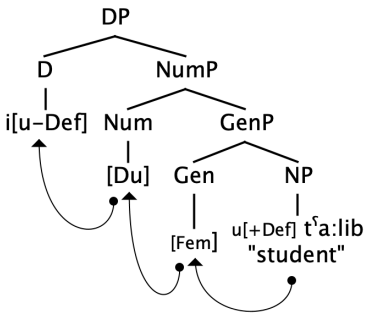
### 2.2.1 Simple (In)definite Nouns

In Arabic (and Hebrew), it has been argued that the presence and the absence of the definite marker /*al-*/ (or */ha-/* for Hebrew) is the parameter that this language relies on to distinguish the

definiteness of nominals. More clearly, the absence of that marker requires the presence of a phonologically null D that represents indefiniteness[8] (Fehri, 1993, 1999, 2012; Borer, 1999; Benmamoun, 2000; Wintner, 2000; Longobardi, 2001; Shlonsky, 2004; Danon, 2008; Alqarni, 2015; and others). Regarding the attachment of the determiner, Arabic is a synthetic language that encodes syntactic constituents in morphological elements attached to words (Fehri, 2012). As indicated, the (in)definite morpho-syntactic feature in this language is not an independent determiner word that originates in D. Rather, it is an affix that attaches to nouns. In contrast to other features that are suffixed to a noun in the derivation, such as number and gender through head to head movements, the (in)definite features are attached to a noun (stem) in the lexicon and the interpretation of such features is conditioned by the presence of the D head in the structure (Borer, 1999; Siloni, 1997; Danon, 2008, 2011). Based on this proposal the D head of Arabic (or Hebrew) acquires the definiteness specifications from the nominal that bears this feature as follows:

(5) a. **(at-)**tˤa:lib-**t-an**
(**the-**)student-**Fem-Du**
"the two female students"

b.




The syntactic derivation (b) for the simple noun in (a) shows the heads that N moves to before it appears in D. The number and gender are suffixed to nouns because those features are parts of the syntactic heads. Therefore, they have to be suffixed to the nouns while the definiteness feature

[8] Arabic is similar to Italian and other Romance languages that project a null D for indefinite nouns. See Chierchia (1998).

originates with the stem from the lexicon as an uninterpretable feature and determines the definiteness value of D. Mapping the above syntactic structure to LF will result in interpreting a noun as (in)definite based on the specified definiteness feature (post-agreement) of the D head because as shown the D head has the interpretable definiteness feature i[u-Def] while the noun has the uninterpretable u[+Def] that is realized as a definite marker (cf. Pesetsky & Torrego, 2007 for featural agreement and interpretation)[9].

This claim is justified by the prefixal nature of the definite marker, in contrast to number and gender features, which originate under the heads of GenP and NumP and get suffixed to nouns in the derivation (Borer, 1999; Siloni, 1997; Danon, 2008, 2011). Further, the presence of the definiteness feature (or the determiner) with non-nominal components for grammatical reasons is another piece of support for this hypothesis. Put differently, the definiteness distinction can affect other non-nominal components with no semantic value for this distinction due to the lack of the D head. This projection conditions the semantic interpretation of the definiteness feature. The following represents several environments where the marker appears with words where it appears to make no semantic contribution:

(6) was$^{\varsigma}$al **at-t$^{\varsigma}$a:lib-u** ***(al-)mumtaz-u** **(definiteness concord)**
arrived **the-student** **the-excellent**
"the excellent student arrived."

(7) a. was$^{\varsigma}$al t$^{\varsigma}$a:lib-un **bi *(al-)amsi:** **(adverb after preposition)**
arrived student-Nom **in the-yesterday**
"a student arrived yesterday."

b. was$^{\varsigma}$al t$^{\varsigma}$a:lib-un **(*al-)amsi:** **(adverb with no preposition)**
arrived Indf-student **(*the-)yesterday**
"the student arrived yesterday."

[9] In this work, the tense feature that attaches to verbs is valued, but uninterpretable. This feature values its interpretable counterpart in T. The framework and the definiteness interpretation will be explained more in the upcoming sections. Now, I would like to introduce the starting point.

(8) qa:bal-tu **ha:ða** ***(at-)tˤa:lib-a** (**nouns after demonstratives within a DP)**
met-I **this** **the-student**
"I met this student."

(9) qa:bal:-tu ar-radʒul-a ***(al-)ði taħtarimu-hu** **(relativizer)**
met-I the-man **whom respect-him**
" I met the man whom you respect."

In the above examples, the definite marker between the parentheses is semantically vacuous. For instance, the attributive adjective in (6) appears with the definite marker for agreement. In (7), its attachment to the adverb *(al-)amsi* "yesterday" is required for grammatical reasons when it follows a preposition *bi* "in". Without this preposition, this definiteness marking is not possible in this sentence. For (8), if a demonstrative functions as a determiner, the definite marker attachment to the complement noun is required. Similarly, a relativizer requires the marker too, as in (9). Despite other environments, in all the previous cases, /al-/ is pleonastic, and it is required for grammatical well-formedness, rather than conveying any semantic definiteness distinctions.

### 2.2.2 CS Syntactic (In)definiteness

After discussing the syntactic aspects of Arabic (in)definiteness, we can now switch our attention to approach the syntax of CS (in)definiteness. Based on the previous introduction, the second noun (complement/non-head) in a CS is distinguished for (in)definiteness overtly. This overt (in)definiteness value extends covertly to the whole CS due to definiteness spreading (inheritance). Due to the covert (in)definiteness value, it is ungrammatical to mark the head with the definite marker *al-*:

(10) a. **saja:rat-u** al-walad-i dʒamila-t-un
**car**-**Nom** the-boy-Gen beautiful
"the boy's car is beautiful."

b. ***as-saja:rat-u** al-walad-i dʒamila-t-un
the-**car**-**Nom** the-boy-Gen beautiful

In contrast to example (a) above, the CS in (b) is ungrammatical because the head noun as-*saja:rat-u* "the car" is marked for definiteness overtly. Additionally, the (in)definiteness concord of adjectival modifiers is another factor which shows that both nominal components of the CS are syntactically (in)definite even though the first nominal is not marked for definiteness overtly. This agreement can be witnessed when a post-nominal adjective occurs after the CS. This adjective can modify either nominal, and it agrees with it for definiteness, case and φ-features as indicated for simple nouns:

(11) **saja:rat-u** al-walad-i **al-zarqa:ʔ-u** dʒamilat-un
**car.Sg.Fem-Nom** the-boy.Sg.Mas-Gen **the-blue.Sg.Fem-Nom** beautiful-**Nom**
"the boy's blue car is beautiful."

In (11), the CS is modified by an adjective that is marked by the definite determiner /*al-*/ to agree with the CS head for definiteness because of the covert inherited definiteness, in addition to case, number and gender. However, if it modifies the complement, it will agree with it for case, φ-features and definiteness as in the following:

(12) saja:rat-u **al-walad-i** **al-sayir-i** dʒamilatun
car.Sg.Fem-Nom **the-boy.Mas-Gen** **the-little.Sg.Mas-Gen** beautiful
"the little boy's car is beautiful."

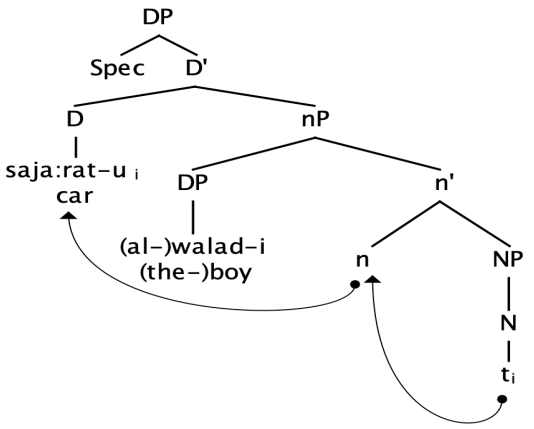
To summarize, case and φ-feature agreement determines which constituent of the CS is being modified by the adjective, yet the definiteness agreement remains intact despite the modification variation.

### 2.2.2.1 Syntactic Proposals

Many syntactic works have approached the CS structure of Arabic[10] (Fehri, 1993, 1999, 2012, 2018; Benmamoun, 2000; Borer, 1996, 1999, 2008; Danon, 2001, 2008; Dobrovie-Sorin, 2000; Kremers, 2003; Longobardi, 2001; Ritter, 1988, 1991; Siloni, 1997; Shlonsky, 2004; and many others). Generally, the syntactic accounts that aim to explain the structure of CS differ with respect to some intermediate projections in their posited derivations. These intermediate projections represent attempts to explain (in)definiteness spreading, case variations between the two nominal constituents, and other morphological elements that the head noun acquires. For introductory purposes, the below derivation represents the basic structure that is shared by the previous syntactic analyses:

(13) a. saja:rat-u (al-)walad-i
car-Nom the-boy-Gen
"the boy's car"

b.




Despite some morphological and other projections that have been eliminated, the head *saja:rat-u* "car" merges under NP, and it undergoes head movement to D obligatorily similar to a simple DP,

[10] Due to the syntactic similarities between Hebrew and Arabic for DP structure and CS, the findings of any proposal about one language can be extended to the other.

while its nominal complement merges into Spec NP (or nP)[11]. Overall, this is the basic starting point that shows how and where the nominal components merge syntactically. However, the most debated issue, when it comes to CS, is the definiteness inheritance that causes the variations between the works' accounts in the literature. The theoretical approaches of these works for analyzing the inheritance can be categorized into the following:

i. Agreement Approach

ii. Incorporation and Percolation Approach

iii. Semantic (LF) Approach

In the following, I discuss proposals of each type in order to understand the various views about CS generally and the issue of definiteness inheritance specifically.

## A. Agreement Approach

- **Abney (1987)**

The starting point that inspired most of the works about genitive (or possessive) structures is Abney (1987). Beyond his influential contribution for introducing the DP projection, he provides an analysis for prenominal genitives of English (Saxon Genitives):

(14) a. The man's car
b. A man's car

This structure, according to the cited work, is a DP headed by an abstract phonologically null D that dominates the possessum. This null head is not specified for (in)definiteness as in the overt counterpart; rather it inherits its definiteness specification from its possessor, which merges in its Spec with an overt article. Further, this abstract head is responsible for the genitive case of the possessor that is realized as *'s*. The behavior of this abstract D is accounted for syntactically by

[11] For now, the little n represents an abstract functional head that is assumed to be the source of the relation and theta role of the complement in its Spec (Longobardi, 2001; Adger, 2003).

assuming that it is a $D_{Agr}$ that accomplishes both definiteness agreement and case assignment:

(15) [DP The/a man's [D' [D Agr] [NP car]]]

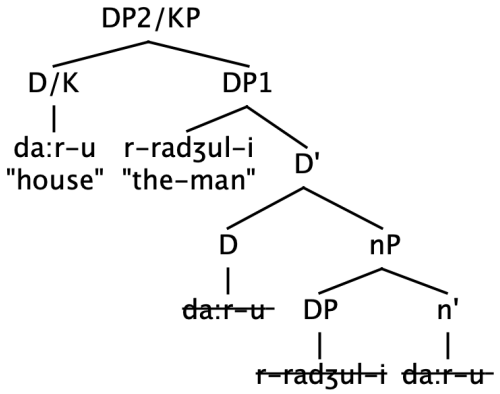
Following Abney, many works were developed to account for genitive structures' definiteness in several languages, including Arabic. The main view of the most consequent proposals is that the definiteness inheritance is attributed to the narrow syntax of this form, which impacts its semantic interpretation.

- **Fehri (1993, 1999, 2018)**

Despite the word order variation between English pre-nominal possessive (Saxon genitive) and CS, following Abney (1987), Fehri argues that the D head of the CS differs from the one within simple DPs that is phonologically realized, due to the indicated aspects of definiteness inheritance and the genitive case assignment to the possessor. In Fehri's works, Abney's proposal was adjusted to account for Arabic by introducing the split DP hypothesis. Based on this hypothesis, the CS DP projection has two layers, DP1&2 (Fehri, 1999), or one DP that is a complement of KP (case phrase). The two analyses are syntactically identical despite the variant terms of the topmost projection, DP2 or KP (Fehri,1993, 2018 cf. Szabolcsi, 1994). D1(inner) is responsible for definiteness inheritance as well as the genitive case while the outer counterpart D2/K is the position where head noun receives the case of the whole structure:

(16) a. da:r-u r-radʒul-i
house-Nom the-man-Gen
"the man's house"

b.




(Fehri, 2018: 108)

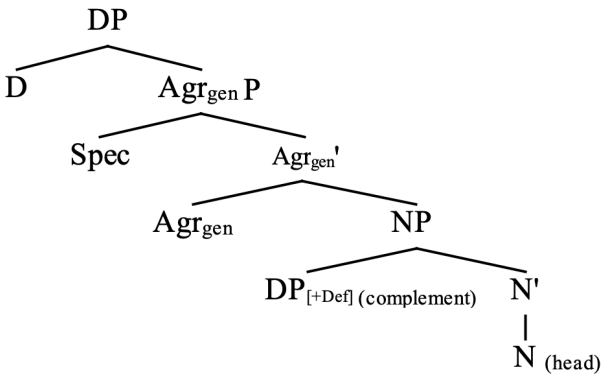
As shown, the head N of a CS moves cyclically to D1 and then higher to the head D2/K. The complement that merges as an argument of the functional head little n (cf. little v) is specified for (in)definiteness and must move to Spec D1 to achieve (in)definiteness agreement through Spec head agreement (Fehri, 1993). In a more developed version, the agreement resembles the T and subject agreement in clauses where T probes for a DP goal to value its φ-features and the case feature of its goal; then, it attracts the goal to its Spec (Fehri, 1999, 2018). Overall, the lower D is the head that carries the definiteness feature while the upper one is semantically vacuous, and its projection is necessary for syntactic case.

- **Siloni (1997)**

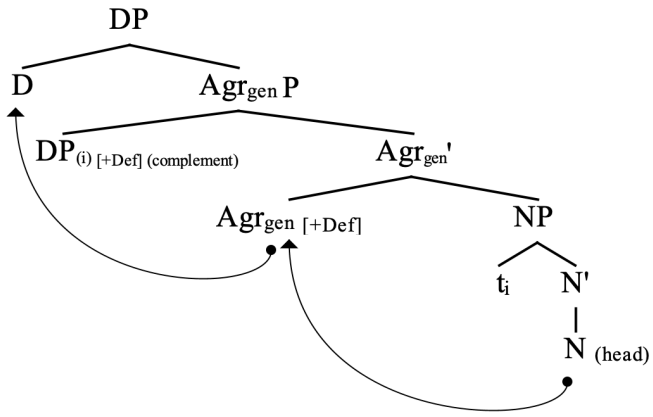
This proposal suggests that the D head, in Arabic and Hebrew, is an abstract head whose definiteness value is determined by the definiteness feature that is affixed to nouns in the lexicon. D definiteness valuation (or checking) is accomplished by syntactic N to D movement. For CS, the head noun merges in the structure without this feature, in contrast to simple DPs, because the CS definiteness feature is inherited from the complement DP in the derivation. This inheritance is achieved by an $Agr_{gen}P$ projection that is dominated by D. Both D and $Agr_{gen}$ heads are sensitive for definiteness. The CS derivation proceeds as follows: the complement that originates in Spec NP moves to Spec $Agr_{gen}$ P to check its structural case and establish definiteness agreement with

$Agr_{gen}$ head. Next, the head N moves to $Agr_{gen}$ through head-movement to adjoin to that head. Then, N+$Agr_{gen}$ moves to D to supply definiteness for the whole DP as follows:

(17) a.




b.



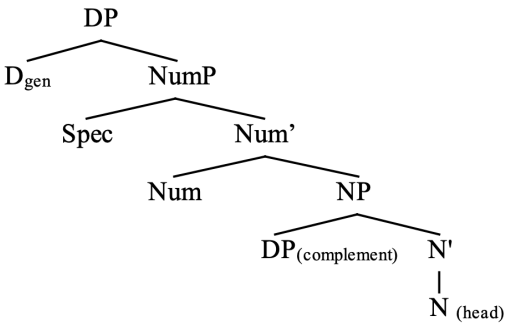

For Siloni, the reason for not spelling out the definiteness feature in CS is the hypothesis that the definiteness feature is now contributed by $Agr_{gen}$ rather than the head noun itself. Therefore, it cannot be spelled out in the noun.

- **Ritter (1991)**

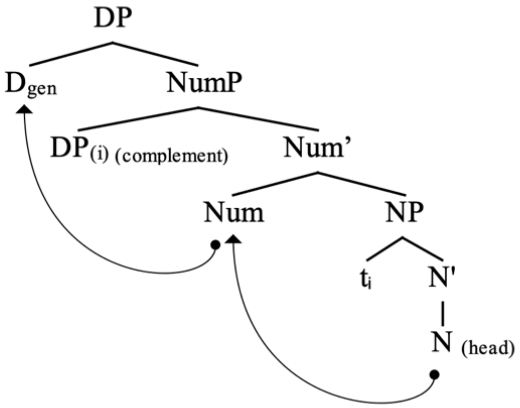
Ritter proposes that there are two types of Ds in Arabic and Hebrew that appear in complementary distribution (cf. Abney, 1987 for English). The first one has the overt form of the determiner while the second is a $D_{gen}$. For this analysis, the CS complement externally merges in Spec NP. N and the complement in its Spec undergo definiteness agreement (Spec-head agreement). After acquiring its definiteness, the head undergoes head movement cyclically to D while the complement moves to Spec NumP to be adjacent to D and receives its case from $D_{gen}$ under

government. The proposed movements explain both the case assignment and why modifiers cannot intervene between the components of the CS:

(18) a.




b.



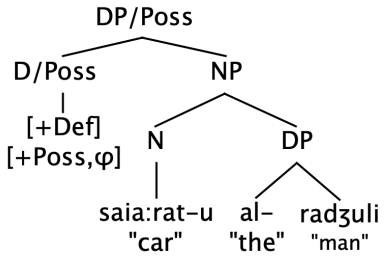

The above structures represent Ritter's analysis for CS. The core idea of this analysis is that definiteness inheritance takes place before movement and the adjacency requirement can be explained by the shown movements.

- **Kremers (2003)**

The proposal of this work resembles the accounts of Ritter (1991) and Abney (1987) in that the D head of the CS is a hybrid head $D_{Poss}$ (cf. $D_{gen/Agr}$) where the head contains both [Def] and [Poss] features. When an NP is dominated by that $D_{Poss}$ and the feature [+Poss] is active, the [Def] feature is forced to remain unvalued until D probes for a goal (complement) to value its φ-

features[12] and the goal genitive case. Consequently, this agreement also values the definiteness of that D, as shown below:

(19) a. saja:rat-u ar-radʒul-i
car-Nom the-man-Gen
" the man's car"

b. 


As demonstrated, when D has a [+Poss] feature, it will agree with the possessor/complement *ar-radʒul-i* "the men" to value its φ-feature plus definiteness. Consequently, the possessor will receive its genitive case. Lastly, this proposal also differs from the former ones in that the possessor is a sister complement of the head noun, not in Spec NP. This syntactic difference is justified by domination the hybrid D head which allows the noun to have a sister complement.

## B. Incorporation and Percolation Approach

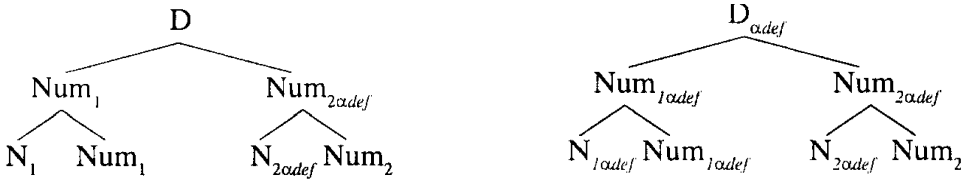
- **Borer (1999)**

Borer agrees with Siloni's (1997) proposal about the abstract D projection whose value is determined by the (in)definiteness feature that is affixed to nouns (stems) in the lexicon. The interpretation of this feature is conditioned by movement to D. Regarding CS, the bare head noun of the structure is not specified for this feature. This noun and the D head of the whole structure acquire this feature from the complement. Accordingly, the (in)definiteness inheritance is achieved

[12] Kremers (2003) assumes that Poss establishes φ-feature agreement between the complement and the head of CS because Hungarian possessives require the possessum to agree for number and gender with the possessor. In contrast, Arabic does not show this agreement overtly. Therefore, he presupposes that this agreement takes place in Arabic covertly.

by incorporating both the complement and the head noun into the topmost D. To make the suggested incorporation possible theoretically, Borer proposes that the maximal projection of the complement of the CS should be a NumP and not a DP. Then, it must move to Spec of CS NumP. Next, both the CS head and the complement head nouns will incorporate into their Num heads and then into D. The latter movement to D is licensed because both constituents are governed directly by D. The result of the final incorporation permits percolation of the definiteness feature of the complement to both D and the head noun (N1 below) of the CS. In the following, N2 is the complement that is specified for (in)definiteness whose definiteness value is inherited by other elements within the following structure[13]:

(20) **a. Incorporating Complement** **b. *α*def percolation**




The main argument of Borer for proposing syntactic incorporation is that the CS two nouns merge to form one prosodic word at PF where the primary stress is placed on the complement. On the other hand, the free state form, with an overt preposition, does not encounter this effect since each nominal has its own stress. In addition, this incorporation explains the adjacency requirement between the components of the CS where modifiers cannot intervene between those nominals, in contrast to the free state form.

- **Benmamoun (2000)**

His proposal argues against Borer's (1999) syntactic incorporation (or merger) as a mean-mean for definiteness inheritance. He proposes that the constituents of CS cannot be incorporated syntactically since this process violates the structural preservation constraint. This violation is

[13] I confined myself to the relevant part of the given analysis.

caused by incorporating a maximal projection, the DP complement, into the topmost D head. Additionally, the whole CS does not behave as one unit, in the narrow syntax, since both nominals cannot incorporate into negation (head of NegP) as simple predicate nouns in copular sentences:

(21) a. ʔana **ma-**məʕllim**-ʃ** **(Neg**-N-**Neg)**
I neg-teacher-neg
"I am not a teacher."
(Moroccan, Benmamoun, 2000:151)

b. ***ma**-ktab**-ʃ** 1-wald **(*Neg-**CS-**Neg)**
neg-book-neg the-boy

c. ***ma-**ktab 1-wald**-ʃ**
neg-book the-boy-neg

In (21)(b&c), the nominal CS predicate cannot move to NegP via head to head movement to attach the negation affixes, as in (a), where the simple predicational noun ***ma-**məʕllim**-ʃ*** "not teacher" appears with negation circumfixed around the noun. This implies that the CS components do not undergo syntactic incorporation. If they merge together syntactically, to form one constituent, they would be able to move to the Neg head to attach to the negation. However, this incorporation is not possible. Another argument for supporting the syntactic independence is that the CS and its complement can be coordinated with DPs and the complement can be another CS as follows:

(22) a. idʒtima:ʕ-u **al-mudi:r-i** **wa** **al-katib-i**
meeting-Nom **the-manager-Gen** **and** **the-secretary-Gen**
"the meeting of the manager and the secretary."

b. kita:b-u **mudi:ri** **ar-radʒul-i**
book-Nom **the-manager-Gen** **the-man-Gen**
"the book of the man's manger"

In (a) the complement of the CS *al-mudi:r-i* "the manager" is conjoined with DP *al-katib-i "*the-secretary" which implies that the CS complement is free syntactically. Further, the complement of

the CS is another CS DP *mudi:ri ar-radʒul-i* "the man's manager" which calls the possibility of syntactic incorporation into question. Lastly, each component of the CS can be quantified and modified by adjectives, which weakens the possibility of syntactic incorporation.

Therefore, syntactic incorporation is not a consistent hypothesis for accounting for definiteness inheritance and adjacency. Alternatively, he suggests that both constituents of the CS are base generated with their definiteness features and at PF both components merge (or incorporate). At this level of derivation, only one definiteness feature is spelled out in the rightmost nominal due to an identity constraint at PF that does not allow two identical features to be spelled out together in one prosodic word. If I understood this proposal correctly, definiteness inheritance at the syntactic level does not take place, but what matters is that the two nominals must share the same definiteness feature to accomplish PF incorporation as well as deleting the head definiteness feature.

## C. Semantic Inheritance at LF Approach

- **Dobrovie-Sorin (2000)**

Dobrovie-Sorin rejects the syntactic definiteness inheritance agreement-based accounts (Fehri, 1993, 1999 and Siloni, 1997) as well as incorporation-based accounts (Borer, 1999). This position is justified on the grounds that syntactic agreement does not allow a feature to be realized once and interpreted twice. Nevertheless, this process allows a feature to be realized twice and interpreted once. For instance, gender and number features can be realized more than once in different elements in the derivation, but they are interpreted only once. For incorporation and feature percolation theories, she suggests that incorporation is a PF process rather than a syntactic one and it cannot provide an explanation for the indicated inheritance. Alternatively, her proposal suggests that a CS is a DP with a null D head (semantically vacuous) whose complement right adjoins to Spec DP. The definiteness inheritance takes place semantically (at LF) in that the head which has

a different phonological form (bound/construct form) denotes a function from individuals to individuals (type <e,e>; cf. Frege, 1891)[14]. This function allows it to copy the definiteness of its complement semantically. This view will be explored more in the next chapter.

#### 2.2.2.2 Weaknesses of the Previous Proposals

In the following, the above analyses of CS are going to be reconsidered to highlight weaknesses that should be avoided in the prospective analysis of the current enterprise. I will maintain the above approaches' categories to have a better view of their problems:

### A. Agreement

A great body of the literature agrees that CS definiteness inheritance is an issue of syntactic agreement, either via Spec head (Fehri, 1993, 1999; Ritter, 1991) or Agr projection (Siloni, 1997), without taking into consideration the issue of interpretability. As shown, the definiteness features are treated like other features, such as φ-features, despite the fact that they require an interpretation at LF. However, what can be a great challenge for such theories is how and when this type features is interpreted. Put differently, what conditions the interpretability of a definiteness feature that is being transmitted to the CS? In most cases of Arabic agreement, a verb agrees with its subject for φ-features, but those agreement features are not interpreted on verbs at LF. Specifically, this type of agreement is needed to have the correct PF form rather than instantiating and interpreting the features twice, because φ-features are interpreted once on the nominal subject. As noted by Dobrovie-Sorin (2000), this type of agreement is not a consistent way of analyzing CS definiteness inheritance. Further, attributive adjectives post-nominally, in Arabic, agree with their modified noun for φ-features and definiteness as exemplified in (6), (10) and (11). These features are not

[14] Frege (1891:140) discussed complex nouns like *the capital of German Empire.* He proposes that *the capital of* denotes an unsaturated function whose reference is undetermined (*the capital of x*). When it combines with a proper noun that has a reference, such as *the German Empire,* via function application, the unsaturated part (*the capital of x*) becomes saturated and its reference is determined (Berlin).

interpreted on the adjectival component. If CS definiteness is valued by the same syntactic mechanism that values definiteness on attributive adjectives in the narrow syntax, we should expect no definiteness interpretation on either. In order to account for the issue of definiteness agreement and interpretation, the classical theory of agreement should be updated.

## B. Incorporation and Feature Percolation

As shown, Borer's (1999) analysis relies on two principles: incorporation and feature percolation. Let us start with incorporation. In agreement with Benmamoun (2000), the lexical and the syntactic incorporation of (non-compound) nominal CS is not possible since both nominals behave syntactically as two independent words (or DPs), in the sense that both nominals can be quantified, modified by adjectives, and coordinated, while nominal compounds that are subject to incorporation cannot. Also, positing syntactic incorporation violates the structural preservation constraint by merging an XP (complement) into a head. Lastly, the CS cannot behave as one lexical word in that it cannot be merged with negation in Moroccan Arabic. Moreover, Borer herself proposes that the movement of the complement and the head under D is speculative, to achieve feature percolation. Regarding the feature percolation, if we assume that incorporation is possible syntactically, the percolation is going to be an exceptional process for Semitic languages since it is not witnessed with other phenomena in the language (Danon, 2008). Further, if the feature percolation is correct for accounting for the inheritance, what blocks spelling out the feature on the head noun after percolation? Lastly, attributive adjectives agree with the modified noun for definiteness; what makes this definiteness agreement different from CS inheritance? Overall, this method might not be the best account for CS structure and definiteness inheritance due to the highlighted problems.

## C. Semantic Inheritance at LF

Dobrovie-Sorin (2000) approaches definiteness inheritance in CS from a semantic perspective by positing that it takes place at LF. This view is not consistent for several reasons. First of

all, definiteness inheritance has to be a syntactic operation in order to account for attributive adjectives' definiteness concord as in (11). In addition, in Arabic, a relativizer is overtly realized only when a relative clause modifies a definite noun. Thus, if we assume that CS definiteness inheritance takes place at LF, the relativizer should not be overt. Consider the following:

(23) a. rʔa:tu **ibnata** **rdʒul-in** **(*al:ati:)** adˁaʕat kita:ba-ha:
saw-I **daughter** **Indf-man-Gen** **(*who)** lost book-her
"I saw a man's daughter who lost her book."

b. rʔa:tu **ibnata** **al-rdʒulin** ***(al:ati:)** adˁaʕat kita:ba-ha:
saw-I **daughter** **the-man-Gen** ***(who)** lost book-her
"I saw the man's daughter who lost her book."

In example (a), the CS is indefinite; therefore, it is impossible to have an overt relativizer with the modificational relative clause. In contrast, the following example requires the overt relativizer to be present because the modified head of the CS is definite. Put differently, if the definiteness takes place at LF, we would not have an instruction to the PF interface to have the overt form the relativizer. Thus, if definiteness spreading takes place at LF, the relativizer should not be overt. In addition, the ban of the overt form of definiteness marking does not mean that the D head does not have a definiteness feature that affects all derivational levels. The adjectival concord and the relativizer realization are indications that CS has a syntactic D that is equipped with a definiteness feature. Another factor against this method is suggested by Danon (2001, 2008) in Hebrew. In this language, a direct object must be preceded by a special marker (Object Marker; OM) when it is definite. If definiteness spreading occurs at LF, the appearance of this marker should not be expected. Consider the following:

(24) a. raʔiti ***(et)** **ha-yeled**
saw-I **OM** **the-boy**
"I saw the boy."

b. raʔiti **(*et)** **yeled**
saw-I **OM** **boy**
"I saw a boy." (Danon, 2001: 1074)

c. ha-mištara ivtexa ***(et)** **hafganat** **ha-studentim** ha-gdola.
the-police secured **OM** **demonstration** **the-students** the-big
"the police secured the big student demonstration." (Danon 2008:2)

In (a), the simple definite direct object has to appear after the indicated marker obligatorily due to its definiteness, in contrast to its indefinite counterpart in (b). For (c), the definite CS in object position requires the appearance of this marker too. The obligatory appearance of this marker with CS is an argument against LF inheritance. From the above argumentation, it can be argued that definiteness inheritance has to be syntactic because this inheritance impacts all levels of the language system, namely narrow syntax, LF, and PF. Attributing it merely to LF makes the presented interactions in the other levels of language unaccounted for.

#### 2.2.2.3 Prediction Based on Modified Agreement and DP Layers

To account for the structure of the CS and its definiteness inheritance, we have to look at four points. First of all, there is a need to modify the classical feature agreement theory by adopting the approach of Pesetsky and Torrego (2007, PT henceforth) because it avoids theoretical and language constraint violations when it is compared to other theories, such as incorporation and semantic approaches (cf. Danon, 2008, 2011). Further, the adopted framework provides a better understanding of agreement and LF interpretations of features. The second point that needs an explanation is the theta role or the selector of the complement and its genitive case. Additionally, the adjacency requirement between the complement and the head should be reflected syntactically in order to explain why a modifier cannot intervene between these two components. Lastly, we

need to account for possessiveness marking on CS heads. For now, I will start first by looking at possessiveness marking before the other points, which will be discussed in the next sub-sections.

In Hebrew, Borer (1999), Dobrovie-Sorin (2000), Wintner (2000), and Heller (2002) argue that a CS head (bound form) differs morphologically from other nouns or adjectives (free or absolute form). Consider the following:

(25) a.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Absolute:** | sepr | sparim | xulca | xulcot | $lo$a | $alo$ | gadol | gdola |
| **Construct:** | sepr | siprei | xulcat | xulcot | $lo$t | $lo$ | gdol | gdolat |
| | book | books | shirt | shirts | three-M | three-F | big-M | big-F |

(Wintner, 2000:06)

b. *sparim/siprei *ok* dan
books Dan
"Dan's books"

(Wintner, 2000:10)

As shown, Hebrew distinguishes the head noun of CS morphologically by different forms of nouns and adjectives. Similarly, Arabic has the same phenomenon, but it differentiates the bound forms by dropping the suffix [-n] that attaches to nouns, adjectives, and quantifiers when they are not heads of CS (cf. Fehri, 1993). This suffix appears with most free forms despite their definiteness value. The only exception to this generalization is that this suffix does not attach to singular nouns or some irregular plural nouns when they are definite. Nonetheless, this exception does not cause a problem for the given generalization since its presence with an overt definiteness marker is superfluous. More clearly, the overt form of the definite marker is an indication that the noun is free since CS heads' definiteness is covert. In contrast, indefinites in non-CS structure never tolerate the absence of this suffix, as follows:

(26) **Indefinites and Proper Nouns**

a. wasal muʕal:m-u*(-**n**) / muʕal:m-a:*(-**ni**) / muʕal:m-u:*(-**n**)
arrive Indf-teacher.Sg-Nom-n Indf -teacher-Du.Nom-n Indf-teachers-Nom-n
"a teacher/two teachers/teachers arrived."

b. ʕali:-u-*(**n**) as-saʕi:d-u za:ra-na
Ali-Nom-**n** the-happy-Nom visited-us
"the happy Ali has visited us."

(27) **Definite**

a. **al-**muʕal:im-u:**-***(**na**) **as**-saʕi:d-u:***(-na)** za:ru:-na
**the-**teacher-Pl.Nom-**n** the-happy-Pl.Nom-**n** visited-us
"The happy teachers visited us."

b. **al-**muʕal:im-a:-*(**ni**) as-saʕi:d-a:-*(**ni**) za:ra:-na
The-teacher-Du.Nom-**n** the-happy-Du.Nom-**n** visited-us
"the two happy teachers visited us."

The above shows that the free forms require this suffix despite their definiteness values. However, consider the CS heads below where this suffix is not allowed:

(28) **Indefinite CS**

wasal muʕal:m-u(*-**n**) / muʕal:m-a: (*-**ni**) / muʕal:m-u: (*-**n**) radʒul-in
arrived teacher-Nom teacher-Du.Nom teacher-Pl.Nom Indf-man
"a man's teacher(s) arrived."

(29) **Definite CS**

wasal muʕal:m-u(*-**n**) / muʕal:m-a: (*-**ni**) / muʕal:m-u: (*-**n**) ar-radʒul-i
arrived teacher-Nom teacher-Du.Nom teacher-Pl.Nom the-man
"a man's teacher(s) arrived."

According to the examples, this suffix is an indicator of the noun's freedom. From this discussion we can conclude that Arabic distinguishes its bound forms like Hebrew. For the upcoming discussion of the prospective proposal, I will first introduce the PT framework. Next, I will shift back to introduce the analysis for CS structure.

## A. Pesetsky & Torrego (2007) Agreement

PT reconsider Chomsky's (2000, 2001) minimalist agreement with respect to feature valuation and interpretation. For Chomsky, features that an agreement probe head contains are uninterpretable and un-valued. Those features have to be deleted once they are valued by agreeing with a goal that has the valued interpretable ones. The deleted features are only visible at PF for establishing the overt form of agreement. What can be seen in the system is that the lexicon encodes two types of feature: un-interpretable un-valued features in a probe, and valued interpretable features in a goal. Consequently, the syntactic role is to value the unvalued features and delete them before spell-out.

PT have improved the previous theory in a framework that relies on feature sharing and disassociating valuation and interpretation of features. Accordingly, features that come from the lexicon have four forms rather than two:

(30) **Types of Features:**

**a. uF val: uninterpretable, valued**

b. iF val: interpretable, valued

c. uF [__]: uninterpretable, unvalued

**d. iF [__]: interpretable, unvalued**

(PT, 2007:269)

The above system is more flexible than Chomsky's. The difference is that there are two more types of features as in (a&d) where the lexicon has un-interpretable valued and interpretable unvalued features. Put differently, the flexibility of the framework is shown by allowing agreement to take place between different sets of features, and the interpretation of every feature is determined by selection from the lexicon. Another aspect of this framework is that two similar unvalued features in two probe heads can undergo agreement to turn them into two instances of the same feature

(feature sharing). Then, when one instance of the two is valued by agreeing with another valued counterpart in a goal, the valuation affects both instances, as follows:

(31) a. Fα[ ] ... Fβ [ ] ⇒ Fα[3 ] ... Fβ [3]

b. Fα[3 ] ... Fβ [3] ... Fγ val [ ] ⇒ Fα[3 ] ... Fβ [ 3] ... Fγ val[3 ]

(a) above represents the suggested agreement of two un-valued occurrences of a feature that undergo agree, yet they are still unvalued since both became two instances of the same feature that is represented by the assignment number. (b) shows the second stage of agreement when Fβ agrees with the valued Fγ; the valuation also impacts Fα in that three features now are three instances of the valued Fγ in that all of them are valued. To sum up, the above aspects of this framework are the most important syntactic apparatus which will be used to tackle the issue at hand.

## B. dP Projection in CS

In contrast to Abney's (1987) proposal about the unity of the DP in English, there are several works (Szabolcsi, 1994; Fehri, 1999; Zamparelli, 2000) that argue that a DP may project several layers (split DP) to account for several syntactic and semantic interpretations of different DPs across languages. However, the analyses regarding the number and the content of each layer differ in each proposal[15]. For our case here, there is a motivation to pursue a similar concept with a different manifestation. As presented, we came across the issue of the suffix [-n] that distinguishes free and bound forms. What can be suggested regarding the pattern of this suffix is that it base generates under a head of a projection which is sensitive for relations and definiteness within a DP. I call this projection dP (small d), whose head causes this interaction. This projection has an impact

[15] For example, Zamparelli (2000) proposes the existence of three layers for a DP: Strong (SD), Predicative (PD) and KIP, which are motivated syntactically and semantically. SD is the location where a strong determiner merges, PD is for weak determiners like numerals and indefinite article, and KIP is for restrictive modifiers. For Szabolcsi (1994), a DP consists of two levels: one level for determiners (D) and the other for quantifiers (DetP).

that resembles T in clauses. More precisely, let us compare the dP projection here to English T to have a better analogy to understand the posited projection.

For instance, English distinguishes finite clauses from their non-finite (infinitive) counterparts in that tense is specified on T in the former, while T in the latter type is tenseless. Further, the finite one establishes agreement with a subject for φ-features and case. Also, it requires the movement of the subject to its Spec, in addition to impacting the verb's morphological form. On the other hand, the infinitive T, where *to* base generates, is tenseless, does not assign case to the subject, cannot establish φ-feature agreement, and does not impact the form of the verb. Similarly, it can be argued that the d head in CS structure resembles finite T in that it agrees with the CS complement by assigning a genitive case, attracting it to its Spec. Moreover, if Arabic is analogous to Hungarian, we would expect φ-feature agreement between the CS complement and head[16] or we can say that there is φ-feature agreement that is not spelled out, as suggested by Kremers (2003). In contrast, non-CS DPs' nouns appear with the suffix /-n/ as an indication that the d head has no features somehow like infinitive T(to). This proposal can be supported by Siloni (1997) and Fehri's (1993, 1999, 2018) proposals by positing a projection lower than DP for case and definiteness inheritance. But for us here, this head is a small d due to its sensitivity to definiteness. Consider the following example that represents the location of this projection where d has no features:

[16] Szabolcsi (1994) indicates that the possessum agrees with the possessor for person and number as follows:

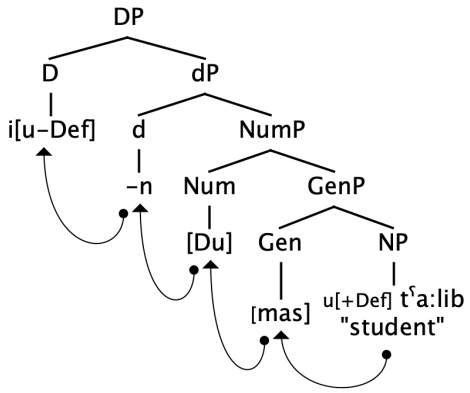
a. a te-kalap-**ja-i-d**
the you-hat-**Poss-PL-2SG**
"your hats"

b. (a) Mari kalap-**ja-i**
(the)Mari hat-**Poss-PL(-3SG)**
"Mari's hats"

The last suffix represents this type of agreement /-d/ and /-i/. In addition, the possessum is marked with the possessive suffix /-ja/ obligatorily in this structure.

(32) a. wasal al-tˤa:lib-a: *(**-ni**)
arrived the student-Du
"the two students arrived."

b.




The above represents the structure of a simple DP. It shows the location of the suffix [-n] under d. This shows the default pronunciation of d when a noun is free in a simple DP.

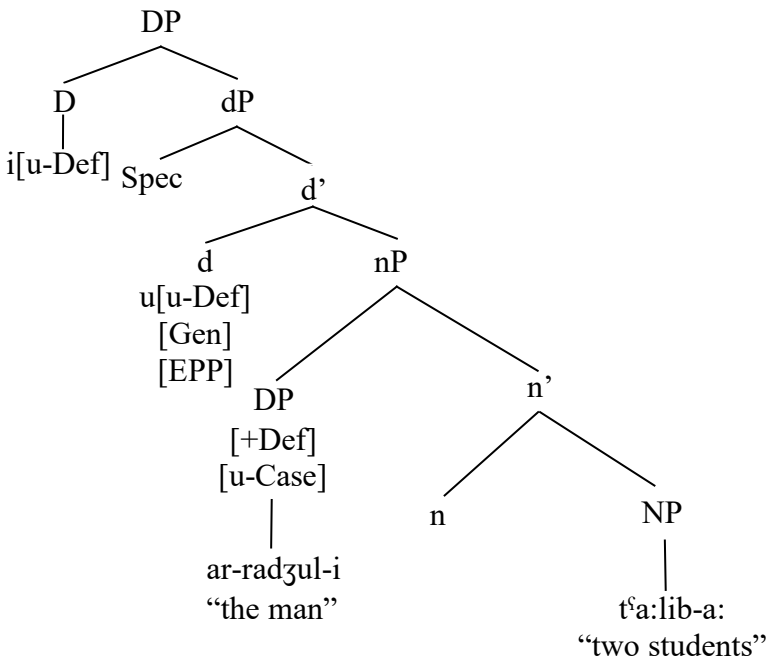
### 2.2.2.4 CS Structure Revisited

For CS, the head noun has no definiteness feature, in contrast to nouns in simple DPs (cf. Borer, 1999; Siloni, 1997). The d head is an active probe equipped with three un-interpretable features: uninterpretable unvalued definiteness feature u[u-Def], EPP, and a valued [Gen] case feature. Furthermore, the D of the CS is another probe that has an interpretable definiteness feature i[u-Def]. The goal is the CS complement that has the valued definiteness feature [+/- Def] feature and its case feature needs to be valued [u-case] (cf. subject in clauses). Before movements and feature valuations, the derivation starts as follows[17]:

(33) a. wasal tˤa:lib-a: ar-radʒul-i
arrived student-Du the-man-Gen
"the man's two students arrived."

[17] For presentation simplicity, number and gender projections were eliminated.

b.

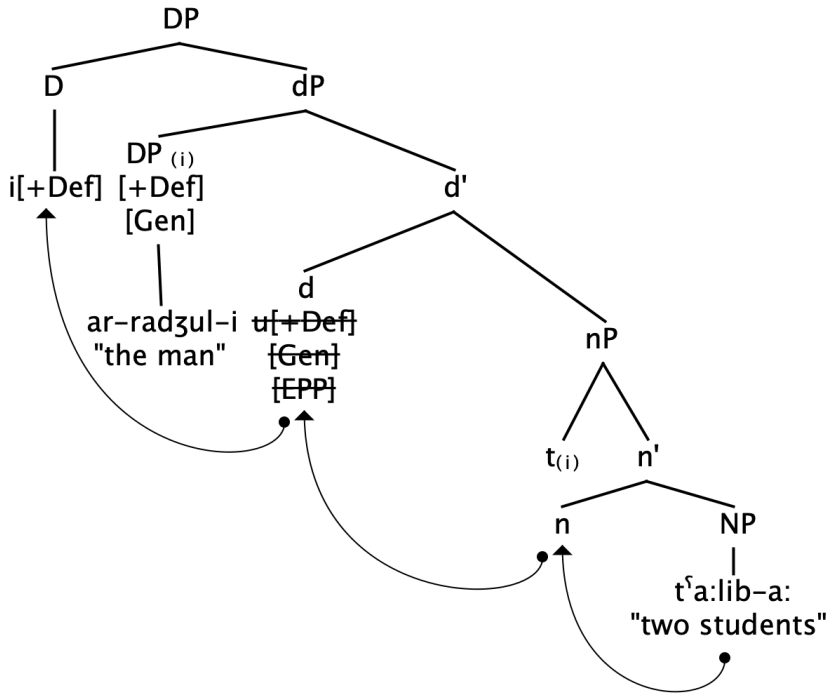



The derivation proceeds as follows:

- **D and d agree (feature sharing) for definiteness:** D has an interpretable unvalued definiteness feature and d has its un-valued un-interpretable counterpart, in addition to genitive case and EPP features. This type of agreement is permitted in PT in that two probes that share the same unvalued features can agree.
- **d probes for a goal:** d looks down in its c-command domain for a goal (DP) to agree with and value its features.
- **Definiteness feature valuation:** after agreement is established between the goal DP and d, the definiteness feature of the topmost D is valued.
- **The goal DP must move to Spec dp to satisfy EPP**.
- **The head noun undergoes cyclic head movement to the topmost D for the following reasons:** like simple DPs, N must move to D for case, and word order.

The output of the above steps can be seen in the following:

c.




### 2.2.2.5 What Can This Analysis Explain?

The above represents the structure of the CS, where the impact of the proposed dp layer explains three basic characteristics. First, it explains how definiteness is inherited from the complement in that d can be viewed as a supporter for the overall D when it inherits its definiteness from another nominal. Secondly, it accounts for adjacency requirements between the head and the complement: no modifier can intervene between those nominals, because if the CS head noun is modified by an attributive adjective which left adjoins to its NP, the adjective should appear after both CS nominals. Further, if the complement DP includes an adjectival modifier, it should appear after that complement directly and before the one that modifies the head of the CS because N, inside the complement DP, has to move to its own D (Head>Complement> complement modifier>head modifier). This can be shown as follows:

(34) a. *saja:rat-u* al-walad-i **al-saɣir-i** ***az-zarqa:ʔ-u***
car.Sg.Fem-Nom the-boys.Sg.Mas-Gen **the-little**.Sg.Mas-Gen **the-blue** Sg.Fem-Nom
dʒamilatun
beautiful
"the little boy's blue car is beautiful."

b. ****saja:rat-u*** al-walad-i ***az-zarqa:ʔ-u*** **al-saɣir-i**
car.Sg.Fem-Nom the-boys.Sg.Mas-Gen **the-blue** Sg.Fem-Nom **the-little**.Sg.Mas-Gen
dʒamilatun
beautiful
"the little boy's blue car is beautiful."

Sentence (a) is grammatical because it maintains the suggested order, where the adjective that modifies the complement precedes the one that modifies the head, and not as shown in (b) where the order is reversed. This order follows from the posited structure due to the obligatory N to D movement of both the CS head and its simple DP complement as well as the complement A-movement to Spec dP. Furthermore, this adjacency permits the nominal's PF incorporation, via relabeling, which allows the whole CS to be pronounced as one word.

Lastly, the structure above allows us to establish a parallelism between genitive and clause structures with respect to three points. One type of similarity can be shown by the contribution of dP where it values the genitive case of the possessor and attracts it to its Spec like TP in a clause. Another supportive point to this parallelism comes from Hungarian, where the head of the genitive structure agrees for φ-features with its complement, like a verb (Szabolcsi, 1994 and Kremers, 2003)[18]. Like clauses, little *v*P can project within a CS when the head is a deverbal noun. This projection is traced by the accusative case of the object as follows:

[18] See footnote 16.

(35) darb-u ʕali-in fahad-an a:lama-ni
beating-Nom Ali-Gen Fahad-Acc hurt-me
"Ali's beating Fahd hurt me."

In example (35), it can be noticed that the nominalized verb *darb-u* "beating" appears with its subject and object. Moreover, the object appears with accusative case and the subject's agentive theta role is assigned by *v*P. Regarding its genitive case, it is contributed by little d as suggested for other types of CS. Overall, these points support the given structural parallelism hypothesis between clauses and CSs.

To sum up, the syntactic aspects of CS were introduced by highlighting important issues related to this structure with a focus on its nominals' definiteness agreement. Several approaches for CS DP were reviewed to understand the aspects of this structure, including definiteness inheritance and the distributions of the nominals within this structure. Accordingly, we can conclude the following:

i. The DP structure shares many aspects with clause structure

ii. Definiteness inheritance takes place at the syntactic level.

Now, it possible to shift the discussion toward the semantic side of the suggested syntactic prediction about CS and its definiteness aspects.

## 2.3 Semantic (In)definiteness

In this section, (in)definiteness will be introduced from a semantic point of view. The goal of this introduction is to understand semantic (in)definiteness and its impact on CS definiteness.

### 2.3.1 Definiteness

The phenomenon of definiteness and the question of "what is definiteness?" have been debated by philosophers and semanticists for more than a century. The most well-known work that

can be considered as a starting point for this debate is by Russell (1905) and the theory of uniqueness. Later, several works were conducted to approach definiteness and reconsider Russell's proposal. Those works, based on their definitions of definiteness, can be categorized into two main views:

#### 2.3.1.1 Uniqueness

Russell (1905) associates definiteness with uniqueness. According to Russell, the definite description *the king of France* asserts the existence of a unique entity that satisfies the description. This proposal can be represented by the following logical form:

(36) a. The king of France is bald.
b. ∃x[king of France(x)& ∀y[king of France (y) →y=x] ∧ bald (x)]

That theory lasted for almost 50 years until Strawson (1950) reviewed the same example by hypothesizing that this sentence does not assert the existence of the unique entity *the king of France*, but rather it refers to him. As a result, the existence has to be presupposed and failure of the presupposition (absence of a king of France) does not mean that the whole sentence is either true or false. This hypothesis is very prevalent in static semantics works on definiteness (Frege, 1892; von Fintel, 2004; Elbourne, 2005; Glanzberg, 2007; and others). The below modified Russellian view formed the basis for H&K's (1998) lexical entry for the definite article inspired by the Fregean view:

(37) a. $\lambda P : P \in D_{<e,t>} \& \exists!x[P(x)=1].\ \iota y[P(y)=1]$
b. **Paraphrased as:** $\lambda P : P \in D_{<e,t>}$ and there is exactly one x such that P(x)=1. the unique y such that P(y) = 1

The above lexical entry denotes a partial function that maps a property (singleton set) to an individual. Also, the condition of uniqueness in this entry is presupposed.

### 2.3.1.2 Familiarity

Another dominant theory of definiteness is familiarity, proposed first by Christophersen (1939). The main contribution of this theory is that when a definite description is used, both interlocutors have to be familiar with the referent of this description. Later, Heim (1982) developed this theory to approach the semantics of (in)definiteness in a dynamic framework to account for donkey sentences as well as to distinguish between the notions of (in)definiteness. The main contribution of the work, with respect to definiteness, is the metaphorical file card system (File Change Semantics) following Karttunen (1969, 1976). This file is a metaphorical representation of a context. It is conditioned by novelty and familiarity conditions to establish new cards, and update them based on the novelty of a referent (indefinite noun) that requires a new card and the familiarity of a referent (definite noun) updates an existing card in the file. Consider the following example:

(38) za:ran-i: **tˤa:lib-un** albariħta wa ħadaθa-ni **at-tˤa:libu** ʕana maʃakil-hi
visited-me Indf-**student** yesterday and talked-me **the-student** about problems-his
"a student visited me yesterday and the student talked to me about his problems."

Along the line with Heim's (1982) theory, the first mention of *tˤa:lib-un* "a student" establishes a card in the file and the second mention updates that established card *at-tˤa:libu* "the student". Since the current investigation relies on a static framework for semantics, the first type of definiteness, uniqueness, is going to be adopted to approach definiteness in the upcoming discussions.

## 2.3.2 Indefiniteness

Generally, the basic intuition behind using an indefinite noun in a conversation is to signify the existence of a referent that is not familiar (novel) (Heim, 1982) or not unique to interlocutors in a conversation (Russell, 1905). Languages tend to encode such meaning by the presence of the

indefinite marker or allowing nouns to surface with no article (as in Arabic and Hebrew). Compositionally, indefinites in the early works of Russell followed by Montague (1973) are treated as existential quantificational DPs:

(39) A student arrived.
  a. λP. ∃x[student (x) ∧ P (x)]
  b. ∃x[student (x) ∧ arrived (x)]

Accordingly, the indefinite determiner is considered as an existential generalized quantifier that takes two argumental sets to establish intersection relation between those sets. However, this quantificational analysis conflicts with indefinites' exceptional semantic aspects, which differ from other quantifiers.

#### 2.3.2.1 Scope Problems of Quantification

### I. Pronoun Binding

The quantification assumption does not capture all the aspects of indefinites since they have exceptional aspects that make them different from other quantifiers. For instance, an indefinite might be related anaphorically to a pronominal in another clause. Theories differ in considering this type of relation as true binding. If it is binding, then we would expect the indefinite noun to scope out of its local domain to bind the pronominal at LF, in contrast to other generalized quantifiers whose scope tends to be local. Mostly, the scope of a generalized quantifier does not exceed its clause boundary (Heim, 1982):

(40) a. [A man $_x$] came in. Then, he$_x$ sang.
  b. *[Every man$_x$] came in. Then, he$_x$ sang.
  c. If [a man$_x$] owns [a donkey$_y$], he$_x$ beats it$_y$.

In sentence (a), the pronoun *he* can be co-indexed with its indefinite referent *a man* since indefinites can be anaphorically related to pronouns outside of their clauses. This type of binding is not possible in (b) because the DP is quantified by a universal quantifier. Similarly, in the donkey

sentence in (c) the indefinites *a man and a donkey* can bind pronouns in the consequent clause. This implies that the indefinites escape out of their containing sentences to bind variables out of their domains.

This was one among other reasons that led Heim (1982) and Kamp (1981) to reconsider the quantificational analysis and approach indefiniteness from a different perspective by positing that (in)definites are not inherently quantificational (inspired by Karttunen, 1976; Lewis, 1975). Nevertheless, their quantificational sense is not intrinsic, but it is contributed by other semantic operators in the sentence. Basically, they can be viewed as discourse variables. Therefore, an indefinite noun is assumed to contribute a variable which is bound unselectively by semantic binders, or operators (existential closure, or any other operators). One benefit of this proposal is that it allows indefinites to establish non-local binding relations. Consequently, the classical idea of quantificational indefinites has been revised to account for different interpretations of this type of noun due to their interactions with semantic operators such as individual quantifiers (D-quantifiers: *every*), adverbial quantifiers (A-quantifiers: *always*), and genericity as well as their syntactic distribution in a sentence.

## II. Other Exceptional Scope Readings Beyond Unselective Binding

Still, there are some indefinite scope problems which require other solutions beyond unselective binding. For instance, there is a debate (Farkas, 1981; Fodor & Sag, 1982; Ruys, 1992; Abusch, 1993; Kratzer, 1998) in the semantic literature about the intermediate reading of indefinites and their scope interactions. More precisely, the issue is caused by the existence of an indefinite noun in an embedded (relative) clause that scopes out of its domain by rendering different readings for the following quantified sentence:

(41) *Every professor* rewarded *every student* who read *some book* he had recommended.

(Abusch, 1994)

a. *Every professor> every student> **some book***

∀x [ Prof (x)⟶ ∀y[ (student (y) ⋀ ∃z[book (z) ⋀ read (y,z)]) ⟶ rewarded (x,y)]]

b. *Every professor> **some book** > every student>*

∀x [ Prof (x)⟶ ∃z[book (z) ⋀∀y[ (student (y) ⋀ read (y,z)) ⟶ rewarded (x,y)]]]

c. ***some book** > every professor> every student>*

∃z[book(z) ⋀∀x[ Prof (x)⟶ ∀y[ (student (y) ⋀ read (y,z)) ⟶ rewarded (x,y)]]]

The above LFs show how the indefinite *some book*'s scope interactions render three readings depending on where it is interpreted. For the wide scope reading, there is one specific book that is recommended by all professors and every professor rewarded every student who read that book. The intermediate reading can be paraphrased as for every professor, there is one particular book that he recommends such that every student who read this recommended book was rewarded. For the narrow scope reading, every professor rewarded every student who read any book he recommends. Here the books vary with the students, so every single professor may recommend several books and every student who read any of those will be rewarded by that professor. The question here is how can we account for those readings and especially the intermediate one?

Another problem is the reading of the indefinite in the domain of material implication if-clauses with distributive verbs as follows:

(42) If **three relatives of mine** die, I will inherit a house.

(Reinhart, 1997; Winter, 1997)

The reading that we are looking for here is that there exist three specific relatives of mine. If each one of them dies, I will inherit a house (one house total by the death of all the three). The reading requires the indefinite *three relatives of mine* to scope out of the if-clause while the predicate *die* should apply distributively to each member of the collective relatives. That requires the indefinite to be interpreted *in situ* since the distributivity cannot apply beyond the clause boundary. If this

distributivity applies beyond the clause level, the interpretation of the sentence will differ in that by the death of each member of the three relatives, I will inherit a house (the total inherited houses will be three by the death of all the relatives). This issue will be discussed in more detail in chapter (5).

Overall, the presented issues and other related ones regarding the scope of indefinites have been targeted by several semantic approaches. One that is relevant to our discussion is the choice function approach.

#### 2.3.2.2 Choice Function

Before adopting the choice function apparatus of Reinhart (1997) and Winter (1997) to analyze indefinites, it is critically important to define the notion choice function (CH henceforth). In the upcoming discussions of this chapter, the indefinite article or silent D is interpreted as CH variable of type <<e,t>,e> which applies to the non-empty set <e,t> that is denoted by its argumental noun. The output is an atomic member of that set which this function selects:

> **Choice Function:**
> A function *f* is a choice function (CH (f)) if it applies to any non-empty set and yields a member of that set.
>
> (Reinhart,1997: 373)

Regarding indefinite scope, the indefinite D head provides the indicated variable over choice functions that is bound by arbitrary ∃ closure. The location of this closure represents the scope of the indefinite while it is *in situ*; consider the following:

(43) Every lady read a book.
  a. ∀z [lady (z) ⟶ ∃x[ book(x) ⋀ read (z, x)]]
  b. ∀z [lady (z) ⟶ ∃f [CH (f) ⋀ read(z, f(book) )]]
  c. ∃x[book(x) ⋀∀z [lady (z) ⟶ read(z, x)]]
  d. ∃f [CH (f) ⋀∀z[lady (z) ⟶ read(z, f(book))]]

The above example is ambiguous between the surface scope and inverse scope readings. The two readings of this sentence are represented by Quantifier Raising (QR)(a,c) as well as CH (b,d) equivalences. Both frameworks can represent both readings, but the CH analysis does not require DP movement since its scope is represented by the location of existential closure. The problems presented in the previous sub-section can be solved by assuming that those indefinites remain in *situ* while the CH existential closure determines their reading as follows:

(44) **Intermediate reading:**

∀x [Prof (x)⟶ ∃f[CH(f) ⋀ ∀y[ (student (y) ⋀ read (y,(*f*(book))) ⟶ rewarded (x,y)]]]

(45) ***if-clause* with distributive predicate:**

∃*f*[CH(*f*) ⋀[die ( *f*(three relatives of mine)) ⟶ I will inherit a house]]

(Reinhart, 1997:832)

Adopting the CH framework is important for the current enterprise to analyze a CS DP in order to account for the scope of its indefiniteness and its complement without violating any island constraint that might be caused by extracting elements from a complex DP, as well as to avoid positing that indefinites are inherently quantificational, which is theoretically implausible, as demonstrated before. The semantic type for indefinites for us here is as follows:

**Table 1. Indefinite Denotations and Types**

| Syntactic Distribution | Semantic type | Denotation of the DP |
|---|---|---|
| Argumental | e | f(P) |
| Predicational sentences | <e,t> | λx.P(x) |

## 2.3.3 (In)definite CS

### 2.3.3.1 Syntactic Definiteness Inheritance and Interpretations

In the syntactic section, we looked at the phenomenon of (in)definiteness inheritance (spreading) of the CS & Saxon genitives. The question is: is this syntactic definiteness aspect maintained semantically in both languages? To test this definiteness, Barker (2000) confirms this

syntactic hypothesis semantically by using (in)definite possessives in existential sentences with *there is*, which accept only indefinite nouns or nouns with weak non-presuppositional determiners (Milsark, 1976):

(46) a. There is a man's daughter in the garden.
b. ?There is the man's/ his daughter in the garden.

As indicated, the expletive *there is* sentence allows only indefinite nouns to be predicates in this structure. Thus, we can notice that example (b) is infelicitous because the structure *the man's/ his daughter* is definite due to the suggested inheritance in contrast to (a) where indefiniteness is shared. Comparing the above examples to (in)definite CSs by applying the same diagnostic to Arabic, we can have the same results as follows:

(47) θam:ata **bint-u** **radʒul-in** fi: al-ħadi:qat-i
there **girl**-Nom Indf-**man**-Gen in the-garden-Gen
"there is a man daughter in the garden."

(48) ? θam:ata **bint-u-hu** **/ bint-u ar-radʒul-i** fi al-ħadi:qat-i
there **girl**-Nom-**his** **girl**-Nom **the-man**-Gen in the-garden-Gen
"?there is his/ the man's daughter in the garden."

The same pattern is still present by comparing the examples above to the English ones. What can be concluded here is that (in)definiteness spreading is attested syntactically and semantically in both structures.

### 2.3.3.2 LF Form of (In)definite CS

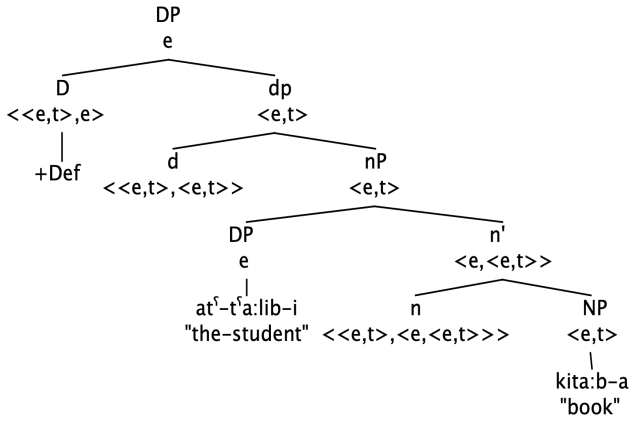
Based on the semantic (in)definiteness, the following represents the LF of the (in)definite CSs:

(49) qaraʔ ʕli:-un **kita:b-a** **atˤ-tˤa:lib-i**

read.past Ali-Nom **book-Acc** **the-student-Gen**

"Ali read a student's book."

a.




⟦n⟧= λP. λz. λx.[P(x) ∧ R(z,x)]

⟦book⟧= λx. [book (x)]

⟦+def⟧= λQ: ∃!x[Q(x)=1]. ιy Q(y)

⟦the student⟧= ιz.student (z)

⟦DP⟧= ιx. book(x) ∧R (ιz.student(z),x)

b. ⟦ʕli:-un qaraʔ kitab-a atˤ-tˤa:libi⟧ = ⟦Ali read the student's book⟧

⟦read⟧ (⟦Ali⟧) (⟦the student's book⟧)

= λv. λy. [read (y,v)] (Ali) (ιx. book(x) ∧R(ιz.student(z),x)))

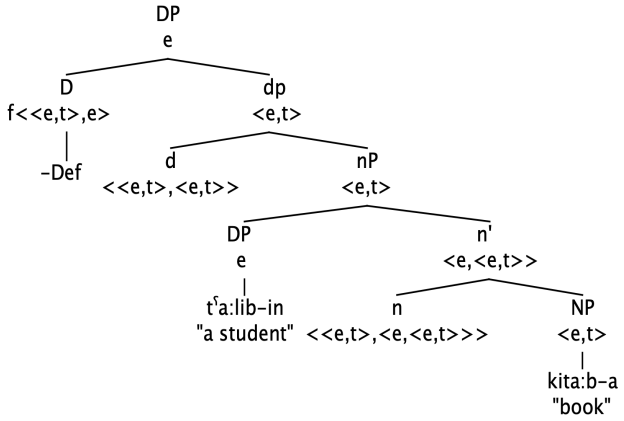
Regarding the indefinite CS the logical form can be as follows:

(50) qaraʔ ʕli:-un **kita:b-a** **tˤa:lib-in**

read.past Ali-Nom **book-Acc** **Indf-student-Gen**

"Ali read the student's book."

a.




⟦n⟧= λP. λz. λx.[P(x) ∧ R(z,x)]

⟦book⟧= λx. book (x)

⟦-def⟧= λP. *f*(P)

⟦a student⟧= (*h*(student))

⟦DP⟧ = *f*(book(x) ∧R((*h*(student)),x)]

b. ⟦ʕli:-un qaraʔ kitab-u tˤa:lib-in⟧= ⟦Ali read a student's book⟧

⟦ read⟧ = λy. λv. [read(v,y)]

⟦ Ali⟧ = Ali

⟦a student's book⟧ = (*f*(book(x) ∧R(*h*(student)),x))

⟦ read⟧ (⟦ Ali⟧) (⟦a student's book⟧)

=∃*f* ∃*h*[CH(*f* ) ∧ CH(*h*) ∧ read (Ali, (*f*(book(x)∧ R(*h*(student)),x)))]

The above sketches the compositional LFs for both (in)definite CSs. The definite one, in (49), seems straight forward. Regarding the indefinite counterpart, in (50), there is a need for two choice functions variables and two existential closures. The order of (∃*f* ∃*h)* does not affect the readings if there is no other semantic operator.

### 2.3.3.3 Definiteness Weakness

A definite CS has some paradigms that require us to question the definiteness of its components. It has been posited so far that the definiteness value of the CS complement extends to the whole structure syntactically and semantically. However, in some contexts, this assumption might not be possible. There are some instances where the definiteness of the CS constituents may vary semantically (Fehri, 1993, 2012; Danon, 2008).

- **Predicational and CS (Head) Definiteness**

The example below represents the issue where the complement is only interpreted as definite while the whole CS (or the head noun) may not share this value. This issue is shared by both English and Arabic possessives, as can be seen in the following examples and their translations:

**Context:** many boys are playing in the school yard. The speaker is looking for the sons of the teacher to introduce them to the new principal. He points at each one of them and says:

(51) ha:ða **ibn-u** **al-ʔusta:ð-i** wa ha:ða **ibn-u** **al-ʔustaði** aid'an
this **son**-Nom **the-teacher**-Gen and this **son**-Nom **the-teacher**-Gen too
"this is the teacher's son and this is the teacher's son too."

**Context:** the same contexts but now the teacher has 9 sons. Every group of three boys are sitting in different locations. He points to each group and says:

(52) ha:ʔula:ʔi **abna:ʔ-u** **al-ʔusta:ð-i** wa **ha:ʔula:ʔi** **abna:ʔ-u** **al-ʔustaði** aid'n
these **sons**-Nom **the-teacher**-Gen and **these** **sons**-Nom the-teacher too
"these are the teacher's sons and these are the teacher's sons too."

Based on the syntactic criteria of definiteness inheritance, The CSs, in the above conjoined sentences, are syntactically definite. However, semantically, the first impression toward those sentences is that the embedded noun is only interpreted as (strong) definite *al-ʔusta:ð-i* "the teacher" while the head noun (or the whole CS) definiteness is weak, because the construct states in (51) and (52) do not pick a unique maximal son or sons in these contexts. As a consequence of losing the maximality (picking a unique atomic individual or sum of individuals), the definite description can be extended to different individuals as indefinite predicates.

However, a simple DP in the same environment always results in a contradiction as follows:

(53) ? ha:ða **al-mudi:r-u** wa ha:ða **al-mudi:r-u** aid'an
this **the-manger-Nom** and this **the-manger-Nom** too
"? this is the manger and this is the manger too."

In sentence (53), the use of a simple definite noun in the predicational environment causes a contradiction which is not witnessed with possessives. The contextual contradiction can be eliminated by the presence of an adjective that distinguishes one manger from the other: *this is the former manager and this is the new manager*. Now the addressee will tolerate the above conjoined sentence to pick different individuals due to the impact of the adjectives.

This issue has received minimal syntactic and semantic attention. From a syntactic point of view, Mandelbaum (1994: chapter 4) proposes that English prenominal possessives in the predicational position are NPs because their definiteness disappears, and this exceptional case does not extend to argumental positions. According to his claim, the possessor and the genitive *'s* occurs in Spec NP as an adjunct. For Zamparelli (2000:131), he proposes that a DP has two layers: SD (strong D) and PD for weak predicational PD (SD>PD>NP). The definiteness covariation is caused by having the possessor determiner interpreted in either layer in that when the possessive is referential, the possessor is interpreted in Spec SD and *'s* under the D of SD. If not, both elements are

interpreted in PD. From a semantic view, Barker (1995) proposes that definite possessives are ambiguous with respect to their definiteness in that the possessum can be definite syntactically and not semantically since it does not refer to a unique individual, especially when it is in a post copular position. The solution for this issue is beyond the scope of the current enterprise since it requires an explanation for the semantic and pragmatic effects that weaken the definiteness in the above examples. As indicated, those examples are syntactically definite, but semantically the uniqueness is lost. However, this effect is not present in argument position where the definiteness is always strong.

- **Complement Definiteness**

Another example for CS where the head noun is definite, but the complement might not be definite, can be as follows:

(54) kasart-u **luʕbat-a** **al-atʿfa:l-i**
broke-I **toy-Acc** **the-kids-Gen**
"I broke the kids' toy."

In example (54), there are two readings based on the semantic definiteness of the CS. The first reading of the CS *luʕbat-a al-atʿfa:l-i* "toy of the kids" presupposes a unique/familiar toy owned by unique/familiar kids. In the second reading, the CS refers to a unique/familiar toy that is made for kids in that the complement is interpreted as a modificational noun instead of a possessor. Both readings are caused by how the definiteness of the complement is interpreted. The first reading is represented by interpreting the complement as an individual-denoting DP that picks a unique group of kids that own the toy. On the other hand, on the second reading the definite DP is interpreted as kind-denoting nominal (generic) or as a compound. This issue is going to be referred to in the next chapter. What is relevant to us here is that the definite CS complement might not be referential because of the indicated factors.

## 2.4 Chapter Conclusion

This chapter approaches CS (in)definiteness from syntactic and semantic sides. The aim of the discussion is to understand the impact of (in)definiteness on CS syntax and semantics. This issue was approached by looking the syntax of (in)definite CS by comparing it to its simple DP counterpart to highlight the syntactic variations between the structures with respect to definiteness. Next, the issue of CS (in)definiteness inheritance was entertained and the conclusion that has been drawn for this issue is that it takes place syntactically by the suggested agreement method. Regarding the semantic side of the CS analysis, the interpretation of (in)definiteness CS was approached by diagnosing the syntactic inheritance and understanding its impact at LF. Additionally, the semantic (in)definiteness of CS is distinguished in the presentation by showing a different LF for each type. In the following chapter, the presentation is directed toward the internal structure of the CS to understand the semantic relation between the head and the complement that causes different interpretations for CS (possessive, modification, or compound). The discussion of the internal syntactic and semantic aspects of the nominal CS will end after introducing Quantificational CS.

# CHAPTER (3) Nominal CS: Possessiveness vs. Modification

## 3.1 Introduction

In the previous chapter, I have reviewed several questions about the interactions of CS and (in)definiteness. In that chapter, the nominal CS is treated as a structural configuration for the possessive relation only. In fact, a CS can be used to express various relations between nominals beyond possessiveness. Those relations affect the internal structure of its components and their semantic interpretation. Here, the discussion is directed toward the relations between nominals within a CS to distinguish their kinds. Despite the PF uniformity of the CS, it can have different syntactic forms depending on the size of its non-head component (possessum or complement). More clearly, the relation between the nominals can be possessive when the non-head is a DP that denotes an individual, modificational if this component is a non-referential NP that modifies the head, or a compound when both nominal components together form an N+N one word compound. Consider the following:

(1) kasart-u **luʕbat-a** **al-atˁfa:l-i** Possessive vs. Modificational
broke-I **toy-Acc** **the-kids-Gen**
"I broke the kids' toy / the toy that is made for kids."

(2) ʔadˁaʕ-tu **dʒwa:z-a** **as-safar-i** Compound
lost-I **possible-Acc** **the-travel-Gen**
"I lost the passport."

In (1), the CS *luʕbat-a al-atˁfa:l-i* "the kids' toy" is ambiguous depending on how the non-head is interpreted. It can be interpreted as the toy that is owned by contextually salient kids or the toy that is made for kids. Obviously, the former interpretation instantiates the possessive reading while the latter is the modificational counterpart, where the complement of the CS modifies the head. Gen-

erally, a non-compound CS is often ambiguous between the possessive and modificational readings. Regarding (2), the CS is a compound where the combination of *ʤwa:z-a as-safr-i* "pass travel" coins a new word "passport".

In this chapter, the differences between the suggested kinds are going to be highlighted to distinguish each type with a great focus on the modificational and possessive CSs[19]. The upcoming analyses target the following points:

- Distinctive syntactic and semantic aspects that distinguish each type of CS (compound, modificational, or possessive).
- (In)definiteness interpretation on CS components and the category of the non-head
- Syntactic structures and LFs for modificational and possessive interpretations of CSs
- The source of semantic relations
- Sortal vs. relational nouns in CS
- Adjectival modification vs. relations

## 3.2 Aspects of CS types

Borer (2009) has highlighted three types of CS based on the syntactic and semantic aspects of the complement of this structure: Compound-CS, M(odifcational)-CS, and P(ossessive)-CS[20]. The distinctions between these types rely on several diagnostics that distinguish each one as will be shown below:

### 3.2.1 Compound-CS

Crosslinguistically, various meanings can be conveyed by different lexical items or by morphological operations that modify an existing lexical item to convey a new meaning. Among

[19] The CS compounds issue is a morphological issue which is beyond the scope of the current investigation. However, it is going to be presented to highlight the distinction between the other types.
[20] or R(egular)-CS in Borer's (2009) terms.

the productive morphological methods that contribute to expressing new meanings is compounding. For this method, words, or lexemes, can combine together to coin new words. In most cases, this combination requires both words to behave as one lexical unit such as *babysit* (Lieber & Štekauer, 2009). Moreover, a genitive structure can be viewed as a form of compounding in that it combines two nominals to convey a new meaning such as *men's room* (Taylor, 1989; Barker, 2011). In contrast to English, Arabic unifies nominal compounds and possessives under the CS structure. The difference between the CS compounds and other CS types lies in the syntactic accessibility and independence of the nominals within the CS.

More explicitly, nominals within a CS compound are very restricted syntactically, in that those components cannot be modified, coordinated, and quantified individually. In addition, each element cannot be referred to by a pronominal individually (Borer, 2008). In most cases, the nominals of this type are holistic [N+N] and non-compositional (Partee, 2008). Accordingly, any alternation will result in losing the compound meaning (no idiomatic reading if there is one)[21]. The indicated aspects can be viewed as diagnostics to distinguish CS compounds. To have better scrutiny, let us apply the indicated diagnostics to the non-head of this CS type as follows:

(3) a. ʔadˤaʕ-tu ***ʤwa:z-a*** **as-safar-i**
lost-I ***possible**-Acc* **the-travel-Gen**
"I lost the passport." **(Compound)**

b. #saʔaltu ʕan *ʤwa:z-i* ***as-safr-i*** **wa** **al-baqa:ʔ-i**
asked-I about *possible-Gen* ***the-travel-Gen*** **and** **the-staying-Gen**
"I asked about the possibility of staying and traveling." **(Coordination)**

[21] Compounds might be semantically transparent in that their meanings can be figured out from their nominal components or they can be opaque in that they have idiomatic interpretations.

c. #saʔaltu ʕan *dʒwa:z-i* ***kul:-i*** ***al-asfa:r-i***
asked-I about *possible-Gen* ***all-Gen*** ***the-travel***
"I asked about the possibility of all the travels." **(Quantification)**

d. *#dʒwa:z-u* ***as-safr-i*** **ila: dawlat-in** **uxra:**
*possible-Nom* ***the-travel-Gen*** **to country-Gen** **another**
"possibility to travel to another country" **(Modification)**

e. #saʔal-tu ʕan *dʒwa:z-i* ***as-safr-i$_{(i)}$*** wa la:kin:a-**hu** **$_{(i)}$**
asked-I about *possible-Gen* ***the-travel$_{(i)}$*** and but-**it$_{(i)}$**
"I asked about the possibility of traveling, but it is…" **(Referentiality)**

The above examples emphasize the claim about the inaccessibility of the compound CS components. The examples are marked with # to show that the compound reading of the exemplified CSs is lost whenever it is coordinated, quantified, modified, or one of its components is referred to individually by a pronominal in a context. To sum up, the given diagnostics emphasize the proposed idea about the unity of the nominal compounds.

### 3.2.2 Modificational-CS

As pointed out, non-compound CSs are ambiguous between possessive and modificational interpretations. For modificational-CSs (M-CSs), the complement acts as a nominal modifier for the head. This modification is established by the combination of a covert relation and the property denotation of the non-head noun. According to this CS type, the relation between the nominals cannot be paraphrased by "own", "part of" or another possessiveness relation which is restricted to an individual-denoting non-head DP. Rather, the relation here can be paraphrased by the preposition *for* in most cases. Strauss (2004) and Borer (2009), following Munn (1995) for the English Saxon Genitive (ESG), posit that the complement of M-CS is not a full DP, but a modifying NP (or property). Like CS compounds, the second noun lacks some aspects such as quantification and

referentiality since it does not impact the contextual list of references; it cannot be referred to by a pronoun and it cannot be quantified. Yet, it can be modified and coordinated with another NP:

(4) a. *luʕbat-u* ***al-atˁfa:l-i*** **wa** **al-bana:t-i**
*toy-Nom* ***the-kids-Gen*** **and** **girls-Gen**
"kids' and girls' toy" **(Coordination)**

b. *luʕbat-u* ***al-atˁfa:l-i*** **al-siɣa:r-i**
*toy-Nom* ***the-kids.Pl.Mas-Gen*** **the-small.Pl.Mas-Gen**
"the small kids' toys" **(Modification)**

c. raʔait-u *luʕbat-a* ***kul:-i*** **tˁifl-in**
saw-I *toy-ACC* ***every-Gen*** ***kid-Gen***
"I saw every boy's toy" **(Quantification →Possessive)**

d. kasart-u *luʕbat-a* ***al-atˁfa:l-i*** ***(i)*** θum:a ʔiʕtaðrtu min-**hum(i)**
broke-I *toy-Acc* ***the-kids-Gen(i)*** then apolog.-I from-**them(i)**
"I broke the kids' toy. Then, I apologized to them." **(Ref→ Possessive)**

As shown, the *liʕbat-u al-atˁfa:l-i* "kids' toys", in (4) can be categorized as possessive-CS (P-CS) or M-CS depending on the context. For the possessive reading, the complement is interpreted as a DP that picks contextually salient kids. Regarding the modificational reading, the definiteness of that noun has no semantic impact due to the absence of the abstract D projection which establishes contextual references. Therefore, quantification or establishing a pronominal reference for CS non-head blocks the modificational reading as in (c&d).

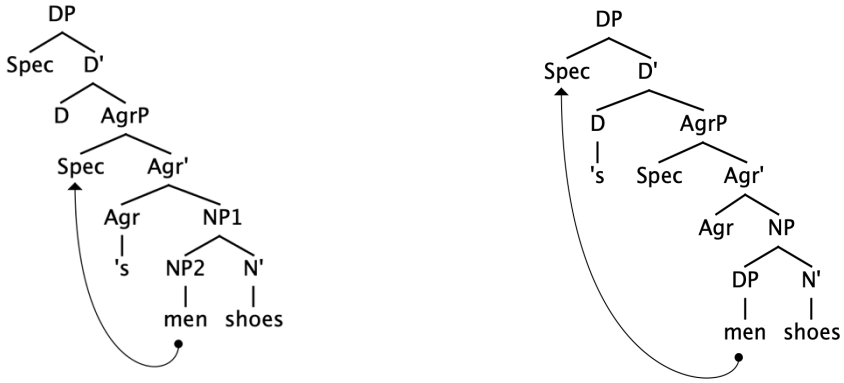
Similar to Arabic, the modificational reading is also attested in ESG, as indicated by Munn (1995). This reading can be witnessed in the translations of the Arabic M-CS in the above examples.

According to Munn, the modificational interpretation of ESG requires number agreement between the head and complement[22]:

(5) a. I saw men's shoes. (possessive or shoes for men)
b. I saw a man's shoe.
c. I saw a girl's school. (possessive or a school for girls)
d. I saw girls' schools.

Based on the given examples and arguments, for Munn (1995:186-87), the following derivations represent the difference between the readings in English:

(6) **a. Modificational** **b. Possessive**




Based on (6)(a), the modificational-ESG (M-ESG) complement is an NP that is adjoined to the head NP. Then, it moves to Spec AgrP to establish the proposed agreement between the head and the complement. In contrast, the complement of the possessive counterpart is a DP that undergoes movement to Spec DP as in (b). For now, the discussion of the M-CS and the comparison to M-ESG will be postponed at this point since this issue will be revisited in section (3.4).

[22] However, the number agreement is questionable because there are some counterexamples where the indicated agreement is lost, but still the genitive structure conveys a modificational meaning:
a. The/a men's department
b. The/a women's issue
In the above examples, we can notice that non-head is plural, but, still it conveys the same modificational reading.

### 3.2.3 Possessive-CS

For P-CSs, as posited earlier, the complement is a full DP that can be modified, conjoined, quantified, and referred to by a pronoun like any other nominal DP in a sentence. More critically, the distinctive aspect is that the P-CS complement is a full DP and not N or NP as for compounds and M-CS. In this type of CS, the semantic relation between the nominals can be paraphrased as "own" possessiveness or its sub-meanings such as control, part-whole, agentive & action, or other contextual pragmatic relations (Vikner & Jensen 2002; Partee, 2008; Barker 2000, 2010); consider the following:

(7) a. *saja:rat-u* ***al-walad-i*** **al-sayir-i** **(Modification)**
*car-Nom* ***the-boy.Mas-Gen*** **the-little.Sg.Mas-Gen**
"the little boy's car"

b. *saja:rat-u* ***kul:-i*** ***al-awla:d-i*** **(Quantification)**
*car.Sg.Fem-Nom* ***all-Gen*** ***the-boys-Gen***
"the car of all the boys"

c. baħaθtu ʕan *saja:rat-i* ***al-walad-i*** fa-ʔayḍˤab-t-**uh** **(Referentiality)**
searched-I for *car-Gen* ***the-boy-Gen*** and-anger-I-**him**
"I looked for the boy's car and I made him angry."

d. baħaθtu ʕan *saja:rat-i* ***al-walad-i*** wa **al-bint-i** **(Coordination)**
searched-I for *car-Gen* ***the-boy-Gen*** and **the-girl-Gen**
" I looked for the boy's and the girl's car."

The above examples show that P-CS components, especially the complement, are more accessible syntactically than those in compound-CSs or M-CSs. This leads us to argue that the CS and its complement are both independent DPs[23]. To sum up, the differences between compound-

[23] See the derivation for P-CS is given in the previous chapter.

CS, M-CS, and P-CS are associated to the non-head syntax which distinguishes each type, depending on its syntactic category: N, NP or DP.

## 3.3 Relations

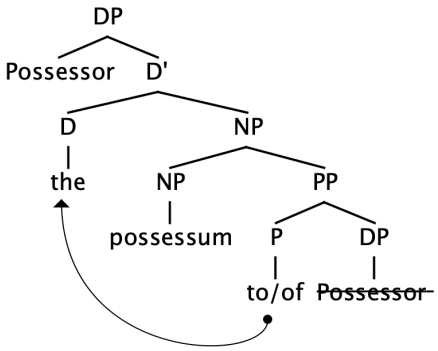
The question that comes to mind is: where is the source or the element that contributes the semantic relation between the head and the complement of the CS? Is it a syntactic projection or another factor that establishes this semantic effect? When it comes to this issue, most of the syntactic works propose the merger of the non-head noun in the Spec of the possessive head NP without showing how the relation is established between these components. Nouns, unlike adjectives, cannot inherently be modifiers of type <<e,t>,<e,t>> nor perform a modificational role established by a compositional rule. More clearly, at LF, there is a compositional rule that establishes a relation between an adjective and its modified noun such as function application or predicate modification, depending on how we interpret this modification. These semantic rules ensure that the modification is established between these components. On the other hand, a relation between nouns requires a syntactic factor such as an overt preposition or a genitive structure. Put differently, combining two nouns without a(n) (c)overt relation is implausible semantically because we need to know how these components combine as well as what kind of compositional rules applies to this combination. Assuming the existence of a covert relation between nominals in a genitive structure, how can we account for its interactions with lexically relational and sortal nouns within M-CS and P-CS?

In the following, we will start by visiting some proposals that have attempted to approach this relation in CS and ESG to see how those theories can be extended to our case. Based on the prospective findings, M-CS and P-CS are going to be revisited to recast their syntactic and semantic aspects, including their inner relations and their interactions with lexically relational nouns.

### 3.3.1 Covert Prepositions

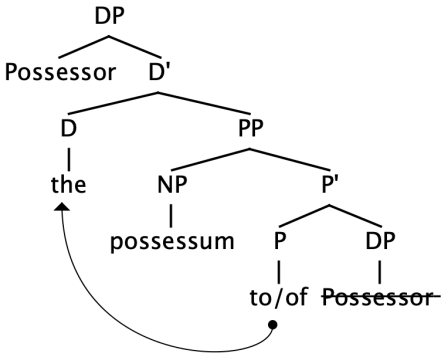
In the literature on CS and ESG, there are several analyses that attempt to capture the source of the relation within genitives. One way is to propose the existence of a phonologically null preposition. This PP modifies the head of the genitive structure as in any instance of PP. A version of the null preposition analysis is proposed by Storto (2003a) for ESG as follows:

(8)




The above structure shows that ESG is derived by movement from a complex DP whose noun is modified by PP. As shown, P moves to D and the result of this movement is the genitive *'s*. Next, the possessor moves to Spec DP to get the right word order which requires the possessor to precede the possessum. Building on these movements, the ESG relation between nominals is established by a preposition whose morphological form is altered due to the impact of the preposition movement to D. Likewise, Larson & Cho (2003) support this view, but they differ from the former proposal by suggesting that the ESG D complement is a PP and not a modified NP as a shown previously. For this view, the possessum of the ESG merges in Spec PP as a subject while the possessor is an internal argument of P:

(9)




As indicated, the main argument of these proposals is to attribute the semantic relation to a PP projection whose PF form is affected by syntactic movements and morphological incorporation of heads. However, there are four arguments against this type of proposal:

## I.Definiteness Inheritance

Given that the ESG and CS agree for definiteness with the possessor, how can definiteness agreement be established with a noun in the domain of a preposition? As indicated in the previous chapter, the possessive complex DP requires definiteness agreement (inheritance). In contrast, PP objects and their modified nouns do not show this type of definiteness agreement. With an overt preposition, the definiteness of the nominals varies since both can be marked for (in)definiteness independently. In contrast, a genitive structure marks only the non-head for definiteness while the whole structure's definiteness is recovered from this marking. Due to this independence, definiteness inheritance might not be possible in the structure of a complex DP with a PP.

## II. M-CS & M-ESG vs. PP

Modificational readings of CS and ESG can be paraphrased by a complex DP with a PP. However, there are differences between the two structures. First of all, M-CS and M-ESG require the non-head to be an NP, while the non-head or the noun after a preposition has to be a DP that denotes kind reference. In English, a noun can refer to kinds when it is indefinite plural or definite

singular, while Arabic achieves the same reference with definite plural and singular nouns. To highlight the difference between M-CS & M-ESG and modificational-PP (M-PP), consider the following:

(10) **M-ESG vs. M-PP**

a. I saw **[*a/the* [*man's room*]]**in the showroom. (M-ESG)

b. # I saw **a room for a man**. (attributive: associating a room to an unknown man)

c. I saw **a room for (*the) men**. (M-PP with kind reference)

(11) **M-CS vs. M-PP**

a. raʔai:-tu **ɣurfat-a** **ridʒa:l-in /** **ar-ridʒa:l-i** fi: al-maʕradˁi (M-CS)
saw-I **room**-Acc **Indf-men**-Gen **the-men**-Gen in the-showroom
"I saw a/the man's room in the showroom."

b. #raʔai:-tu **ɣurfat-an** **li-ridʒa:l-in** fi: al-maʕradˁ-i (Possessive or Attribu-
saw-I **room**-Acc **for-Indf-men**-Gen in the-showroom tive)
"I saw a room for or belongs to some men in the showroom."

c. raʔai:tu **ɣurfat-an** **li-ar-ridʒa:l-i** (Kind Reference=M-PP)
saw-I **Indf-room**-Acc **for-the-men**-Gen
" I saw a room for men."

For example (10), sentence (a) shows an M-ESG that is not affected by choice of the determiner because *man* is an NP that modifies *room* and the determiner applies to whole main NP [*man's room*] which is headed by the noun *room.* Put differently, the determiner contributes to the denotation of the property *room* rather than *man*. Comparing (a) to (b) in (10), each has a different interpretation. In (b), the PP complement does not denote a kind; therefore, the modificational reading is not possible with PP modification. In contrast, (a) and (c) can convey the same meaning because the PP complement refers to a kind in this case. As shown, M-PP, in (c), requires its complement to be a DP that denotes a kind in order to convey the same meaning that is denoted by M-ESG in (a). The same applies to the Arabic M-CS and M-PP in example (11). The main argument behind the presented examples is that M-CS and M-ESG are not derived from complex

DPs with PPs that have undergone some morphological alternation. This can be justified by the reason that the PP complement has to be a DP. In contrast, the genitive structures' complements might be DP, NP, or N.

Moreover, the second problem with respect to the claim that (M-)genitives are derived from complex DPs with PPs is that the complement of the P has to be a DP that impacts the context references, while it is not always the case for ESG and CS non-heads. More explicitly, the non-head of the genitive structure can be co-indexed with a pronoun only in possessive contexts and not in modificational contexts. Let us compare complex DPs with PPs to genitive DPs in the context of modificational readings and pronominals:

(12) **M-ESG vs. M-PP**

a. I saw *a toy for girls*$_{(i)}$ in the store, but *they*$_{(i)}$ cannot buy it without *their*$_{(i)}$ parents approval.

b. #I saw *a girl*$_{(i)}$*'s toy* in the store, but *she*$_{(i)}$ cannot buy it without *her*$_{(i)}$ parents approval.

(13) **M-CS vs. M-PP**

a. raʔai:tu luʕbatan *li-al-bana:ti*$_{(i)}$ wa lakin:a-*hun*$_{(i)}$ la: jastatˁi:ʕna ʃira:ʔaha:
saw-I toy *for-the-girls*$_{(i)}$ and but-*they*$_{(i)}$ not can buy-it
bidu:n mua:faqat-i walidai*:*-*hin*$_{(i)}$
without approval parents-*their*$_{(i)}$
"I saw a toy for girls, but *they* cannot buy it without *their* parents approval."

b. #raʔai:tu luʕbata *al-bana:t-i*$_{(i)}$ wa lakin:a-*hun*$_{(i)}$ la: jastatˁi:ʕna ʃira:ʔaha:
saw-I toy *the-girls*$_{(i)}$ and but-*they*$_{(i)}$ not can buy-it
bidu:n mua:faqat-i wlidai*:*-*hin*$_{(i)}$
without approval parents-*their*$_{(i)}$
Intended: "I saw a toy for girls, but they cannot buy it without their parents approval."

What can be seen in the above examples is that the pronoun use is felicitous only in examples (a) where the modification is achieved by a PP whose complement is a DP that denotes kinds. Otherwise, pronoun co-indexation with the M-CS and M-ESG non-head is illicit since it is an NP and

not a DP as in the (b) examples. This claim does not mean that genitives' non-heads cannot denote kinds. In fact, they can, but whenever the non-head is a DP, the possessive reading is required:

(14) adʒniħat-u *altˁiu:r-i*$_{(i)}$ tumakin-*hum*$_{(i)}$ mina al-taħli:qi ʕa:li:an
wings *the-birds*$_{(i)}$ allow-*them*$_{(i)}$ from flying high
"Birds' wings allow them to fly high."

Example (14) supports the hypothesis that the non-head of a genitive structure can be a DP that denotes a kind which can be referred to by a pronoun. In contrast, the pronominal reference to the non-head of a M-CS or a M-ESG is illicit since it is an NP.

## III. Agents & Possessors

Relations between a possessor and a possessum can be established covertly in a genitive structure or overtly in a PP. The same concept can be compared to agents in active and passive sentences. Agent subjects in active sentences merge in Spec *vP* while in a passive sentence, an agent is introduced by the preposition *by*:

(15) a. John wrote the book
b. The book was written by John

In (a) the agent theta role is established by little v, while the same role is established by the preposition *by*. What can be seen here is that the same theta role can be introduced in different structures by distinct syntactic elements. The same concepts apply to possessive relations where the possessor or the possessive relation, in general, can be established by a PP or by a genitive structure. Even if they are both capable of establishing the same semantic relation, they are syntactically distinct.

## IV. Head Bound Morphological Forms

In the previous chapter, it was highlighted that, cross-linguistically, the possessum in a genitive structure often shows a distinct morphological (bound) form that differs from other nouns elsewhere. For instance, Hebrew and Arabic distinguish the head of the CS morphologically from

other nouns, including the heads of possessives, that are established by overt prepositions (Free State) as follows:

(16) a. (ha) **sparim** ʃell Dan (Free State Hebrew)
(the) **books** of Dan
"the/some books of Dan"

b. **siprei** Dan (Construct State Hebrew)
**books** Dan
"Dan's books"

(Wintner, 2000: 10)

c. **kitab-un** li-fahd-in (Free State Arabic)
**book-Nom-n** of-Fahad-Gen
"some book of Fahd"

d. **kitab-u** fahd-in (Construct State Arabic)
**book-Nom** Fahd-Gen
"Fahd's book"

In addition to the impossibility of marking genitive heads for definiteness, the examples above show morphological differences between free and construct states heads. In Hebrew, the word root undergoes a morphological change *sparim* "book" → *siprei* to show the bound form that is required for CSs (Wintner, 2000). In the same manner, Arabic drops the suffix /-n/ to show the bound form if there is one. Additionally, other languages like Hungarian, for instance, require the head to show a morphological agreement with possessor for number and person, in addition to attaching the possessive suffix (-ja) (Szabolcsi, 1994) as follows:

(17) a te-kalap-**ja-i-d** (Hungarian)
the you-hat-**Poss-PL-2SG**
"your hats"

(Szabolcsi, 1994:186)

As shown, different languages distinguish the possessum in a genitive structure morphologically by various word forms, affixes, or agreement[24]. Therefore, it is hard to connect all of these aspects of possessive marking to a phonologically null preposition.

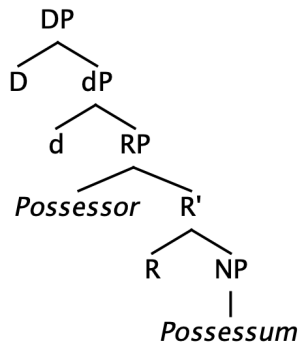
Overall, it can be concluded that phonologically null prepositions might not be the best syntactic approach to capture the relations between nominals within genitive structures because of definiteness inheritance, non-head referentiality, the head PF form, and the various ways of expressing possessiveness relations. Therefore, in the upcoming discussion, the relation between nominals in a genitive structure has to be contributed by another factor other than a preposition.

### 3.3.2 Relator Projection

Instead of assuming the existence of a covert preposition, it is more plausible to argue that the relation between nominals, within CS and ESG, is established by a phonologically null syntactic head. This projection can be dubbed the Relator Phrase (RP) (cf. Den Dikken, 2006; Ouhalla, 2011). It is analogous to, with some exceptions, little *v*P of Chomsky (1995) (VoiceP in Kratzer, 1996). The relator phrase projection is a more general term than PossP (Fehri 1993, Longobardi, 2001; Adger, 2003; Strauss, 2004) because possessiveness is not the only relation that holds in CS and ESG, but, as highlighted, there are various relations that can hold, such as possessiveness, modification, agent, control…etc. The suggested RP projection can be represented in our derivation as follows:

[24] See Nichols & Bickel (2013a) and Nichols & Bickel (2013b) for more typological information about possessive marking in languages.

(18)




As shown, the relation between the two nominals is established by R, whose sister complement is the possessum. The possessor is an external argument in its Spec. In later semantic discussion, R's denotation is going to be introduced by showing how this head establishes the semantic relation.

Another piece of support for this projection is that RP can be also an alternative to *v*P (or voiceP in Kratzer 1996) for contributing the agentive relation for the subject of a nominalized verb when that subject does not receive its theta-role from little v. A nominalized verb in a genitive structure may lack *v*P. Syntactically, the lack of a *v*P projection is traced by the presence of a prepositional case assigner for the object of the nominalized verb, as in (19)(a) below, because it does not receive its accusative case from *v*P. As indicated by Abney (1987), Kratzer (1996), and Harley (2009), the nominalization of a verb takes place at different levels in the nominalized verb DP. More clearly, when this process takes place before the verb combines with its arguments, the subject is syntactically treated as possessor (in Spec RP as shown above) where the agentive relation between that subject and the nominalized verb is one of the various possible relations between a head and a complement of a genitive structure[25]. On the other hand, when the object receives its case from little v in (19)(b), the subject is interpreted as an agent only, as established by the little

[25] Harley (2009) indicates the following regarding this relation:

> "any external argument' is a simple possessor, introduced in Spec-DP in the normal way. It is not assigned the Agent theta-role, but rather is composed with the event nominal via the familiar 'possessive nexus' – an underspecified relationship licensed by the possessor configuration" with little *v*P/voiceP "the external argument receives an Agent theta-role from Voice and must be interpreted as such" (p. 325)

*v*P/voiceP theta-role. Consider the following:

(19) a. darb-u ʕali-in **li**-fahd-in a:lamani ***Ali is Agent (through RP)***
beating-Nom Ali-Gen to-Fahd-Gen hurt-me
"Ali's beating of Fahd hurt me."

b. darb-u ʕali-in fahd-an a:lamani ***Ali is Agent (vP/voiceP)***
beating-Nom Ali-Gen Fahd-Acc hurt-me
"Ali's beating Fahd hurt me."

Overall, the head R is the locus of the relation between nominals in a genitive structure and this assumption furnishes the later semantic analysis of CS.

### 3.3.2.1 Individuals vs. Predicates & RP

Depending on the argument category that R takes in its Spec, I will categorize this relational head into two types: RP can be headed by $R_{ind}$, which takes a DP argument, or by $R_{Pred}$, which takes an NP predicate argument (cf. Strauss, 2004). This phenomenon resembles, to some extent, the difference between equative and predicational copular clauses as proposed by Partee (1987), Mikkelsen (2005), Roy (2013), Alharbi (2017) and others. The only difference between the copula and RP is that the semantic interpretation of the former depends on the post-copular (in)definiteness (ident vs. vacuous) while RP interpretation depends on its subject's (in)definiteness.

For copular verbs, when the post-copular noun is a definite DP, the copular verb is interpreted as ident function of type <e,<e,t>> λy.λx[x=y] (ident in Partee, 1987). In contrast, when the post-copular is an indefinite noun, PP or AP that denotes a predicate, the copula is semantically vacuous. Subsequently, the post-copular predicate takes the pre-copular noun as an argument. Consider the various interpretations of the *be* verb in the following examples:

(20) a. John is the boy. $[\![ be_{ident} ]\!] = \lambda y.\lambda x[x=y]$

b. John is a boy/ lazy/ in the gardent. $[\![be_{pred}]\!] = \lambda P.\ \lambda x.P(x)$

The copula is interpreted differently depending on the denotation of its complement (property vs. individual). The same concept with some differences applies to RP in our case here in that it can be headed by $R_{ind}$ or $R_{pred}$ depending on the noun in its Spec. If it is a DP, we get the Possessive interpretation $R_{ind}$, while the modificational reading is established by $R_{pred}$ when it is an NP.

## 3.4 M-CS & $R_{Pred}$

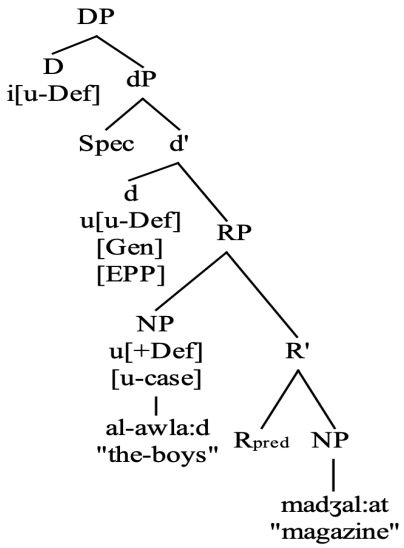
Based on the above arguments, it can be suggested that a modificational CS is a complex DP whose non-head is an NP that originates in Spec RP as an external argument of $R_{pred}$. The definiteness marking on the non-head is not interpretable on that noun because it lacks the abstract D head projection which is a condition for semantic definiteness interpretation at LF, as suggested in the previous chapter. The structure for this form of CS can be shown in the following derivation:

(21) a. madʒal:at-u al-awla:d-i

magazine-Nom the-boys-Gen

"the boys' magazine"

b.

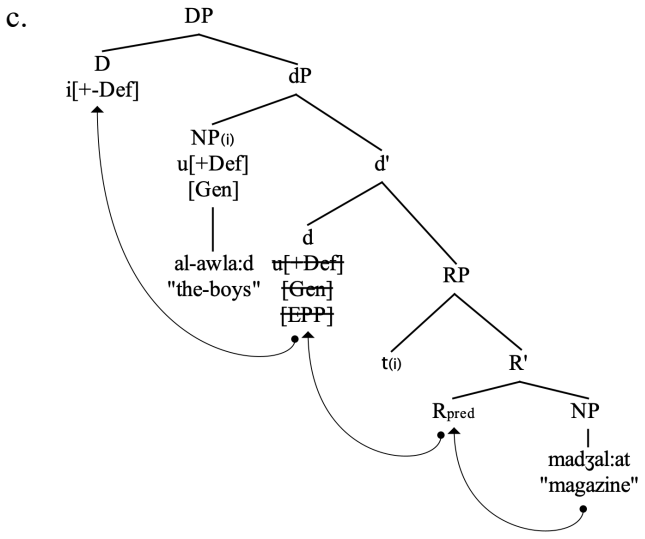



This derivation is a modified version of the CS syntactic structure in the previous chapter. It differs in that the relation between nominals is established by RP instead of nP. Also, the non-head is an

NP that merges in Spec $R_{Pred}$ with an uninterpretable definiteness feature that values the CS interpretable definiteness feature. More explicitly, the definiteness marking (uninterpretable valued feature) on the complement NP *al-awla:d* "the-boys", does not impact that noun interpretation since that noun is syntactically an NP that lacks D(P projection). The derivation proceeds following the same steps as those suggested in section (2.2.2):

- **D and d agree** (feature sharing) for definiteness: D has an interpretable unvalued definiteness feature and d has its un-valued un-interpretable counterpart, in addition to genitive case and EPP features. This type of agreement is permitted in PT in that two probes that share the same unvalued features can agree.
- **d probes for a goal**: d looks down in its c-command domain for a goal that bears the definiteness feature to agree with and value its features.
- **Definiteness feature valuation:** after establishing agreement between the goal NP and d, the definiteness feature of the topmost D is valued.
- The goal NP must move to Spec dp to satisfy EPP.
- The head noun undergoes cyclic head movement to the topmost D for the following reasons: like simple DPs, N must move to D for case, and word order.

c.

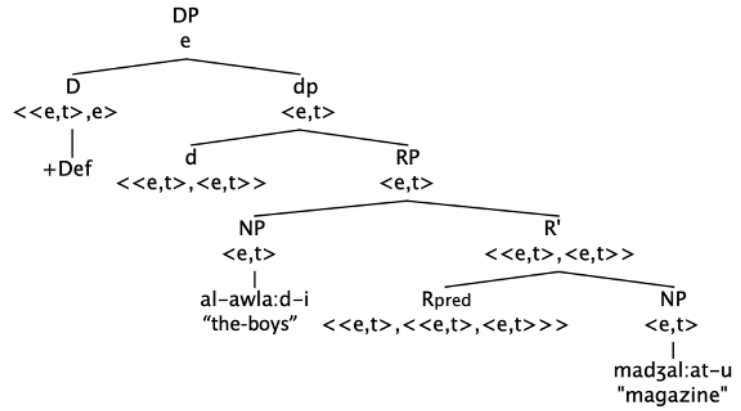



Transferring the suggested structure to LF will result in interpreting $R_{pred}$ as a function that establishes the relation between the predicates. This type of relation is going to have the semantic type <<e,t>,<<e,t>,<e,t>>>. The semantic interpretation of $R_{pred}$ can be shown as follows:

(22) $[\![R_{Pred}]\!] = \lambda P.\lambda Q.\lambda x.P(x) \wedge R(Q,x)$

In the above, $R_{Pred}$ denotes a free variable that establishes a relation between two predicates (possessum and possessor). The output is a characteristic function with a variable that ranges over the entities which the possessum predicate is true of. The full picture of this complex DP can be represented as follows:

(23) a.




b. $[\![R_{Pred}]\!] = \lambda P.\ \lambda Q.\ \lambda x.P(x) \wedge R\ (Q,x)$

$[\![magazine]\!] = \lambda z.$ magazine (z)

$[\![boys]\!] = \lambda y.$ *boy (y)

$[\![The\ boys'\ magazine]\!] = \imath x.$ magazine (x) $\wedge$ R(*boy, x)

The above LF and interpretation show how the R projection establishes a semantic relation between the head noun "magazine" and the non-head modifying noun "boys". Based on the given logical form, the denotation of the CS can be paraphrased as "there is a unique magazine that is related to men". To sum up, we can conclude that modificational CSs' inner components are NPs with a relation that is established by RP. However, it differs from the P-CS where $R_{ind}$ establishes a relation between the head noun and a DP, namely the possessor, as will be shown in the following sub-section.

## 3.5 P-CS & $R_{ind}$

In this section, the discussion is directed toward the P-CS. The goal that will be achieved here is to extend the suggested analysis of RP to the P-CS. But before that, it is more convenient to consider other proposals to draw connections and avoid their weaknesses.

### 3.5.1 P-CS Semantic Proposals

Dobrovie-Sorin (2000), Heller (2002) and Ouwayda (2012) approached the semantics of the CS. They attempt to account for the source of the relations between the nominals as well as the impact of definiteness inheritance between the CS and its non-head component. I start by considering Dobrovie-Sorin and Heller since their accounts are analogous (Individual Approach). Next, Ouwayda's proposal (Predicate Approach) will be presented.

### A. Individual Approach

- **Dobrovie-Sorin (2000)**

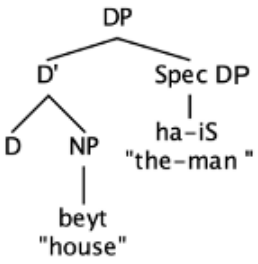
This work aims to account for genitive structures in several languages and one of the discussed structures is the Hebrew CS. When it comes to CS, there are two main syntactic arguments in this proposal:

i. First of all, the work argues against the syntactic (in)definiteness inheritance that is proposed by Fehri (1993), and Borer (1996). Alternatively, the definiteness inheritance takes place at LF. This type of agreement is attributed to the bound form head denotation at LF.

ii. The non-head possessor does not merge within the CS DP in Spec RP/PossP or in the Spec of the possessum NP as in other proposals, but it merges as an external argument in the Spec of the CS DP as shown below:

(24) a. beyt ha-iS
house the-man
"the house of the man"

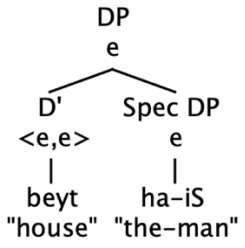
b.




(Dobrovie-Sorin, 2000)

Regarding the semantics of the CS, the analysis of (in)definiteness inheritance relies on the interpretation of the possessum head noun that differs from other nouns elsewhere, namely the bound form. More precisely, this noun denotes a function of type <e,e>, from individuals to individuals, that allows it to combine with its (in)definite complement, via function application, and inherits the definiteness specification from that noun at LF. if the complement is definite, the whole CS denotes a unique individual that is associated with the complement unique individual. However, if the complement is indefinite that denotes a type e variable (Following Heim,1982), the output is that both the CS and its complement contribute variables unselectively bound by existential closure[26].

(25)




a. beyt ha-iS
house the-man
"the house of the man"

b. => y = f (x), where f = house of and x = //the man//

(Dobrovie-Sorin, 2000: 218)

According to the above, the head noun bound form *beyt* "house of" or (D') denotes a function that allow it to compose with the possessor *ha-iS* "the man". When the function applies to an individual denoted by the definite possessor *ha-iS* "the man", it will yield a unique individual of type e (ιy).

[26] Dobrovie-Sorin does not provide a detailed semantic analysis for indefinite CS because this issue requires non-static semantic framework. However, she argues that the given analysis does not conflict with Heim's (1982) proposal of indefinites. See Dobrovie-Sorin (2000:217) for more details.

On the other hand, if the same function applies to an indefinite possessor variable, the CS DP will contribute an individual variable (y) that is bound by existential closure. In this analysis, the covert determiner is semantically vacuous since the denotation of the possessum allows it to copy the definiteness value of the possessor. Put differently, the whole CS (in)definiteness is determined by what the function of the head noun applies to. The semantics that is given to the head noun is supported by two arguments:

i. The ban of the overt form of the determiner in CS

ii. The fact that the head noun cannot be modified by adjectives due to the adjacency constraint in Hebrew which does not allow any intervener between the head and its complement, as follows:

(26) *beyt *ha-gadol* ha-is
house *the-big* the-man
Intended: "the man's big house"

(Dobrovie-Sorin, 2000:149)

Lastly, the given semantic analysis is extended to English Saxon genitives, which also show (in)definiteness inheritance.

- **Heller (2002)**

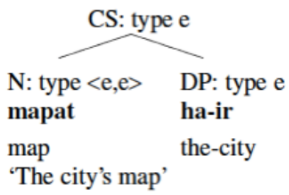
Heller (2002) supports the former proposal due to the same observation regarding the morphological bound form of the head. This support is justified by the argument that this nominal form differs from other nouns elsewhere, including the free state form[27]. Specifically, in the free state form, there is a preposition that establishes the possessive relation between the nominals, and the possessum (modified head noun) does not have a morphological bound form. Thus, the head noun in a CS has a bound morphological form that is distinguished in the lexicon. This form has to be interpreted as a relational noun of type <e,e>. Consider the following example from Hebrew:

[27] The free state form is the counterpart of the CS, but there is a preposition between the head and the complement. Also, in this form, there is no definiteness inheritance and the overt determiners are required in both elements.

(27) a. mapa: free form <e,t> = λx.map (x)

b. mapat: bound form <e,e>= λx ιy [R(x,y) & map (y)]

c.




(Heller, 2002:128)

Similar to Dobrovie-Sorin, the determiner of the whole CS is vacuous and Heller does not include it in the above LF. The analysis focuses only on the head noun, while the null D has no impact semantically.

The presented analyses of Dobrovie-Sorin and Heller have some weaknesses that make them problematic and that prevent them from being extended to Arabic:

## I. Adjectives and Relative Clause Modification

If we assume that the head noun denotes a function of type <e,e>, how is it going to intersect with attributive restrictive intersective adjectives whose semantic type is <e,t>? Even though Dobrovie-Sorin (2000) proposes that the head noun cannot be modified by an adjective in Hebrew, this is not the case for Arabic. For this language, either component of the CS can be modified as follows:

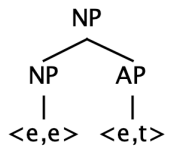
(28) *saja:rat-u* al-walad-i **asˁ- sˁaɣi:ri** ***az-zarqa:ʔ-u*** dʒamilatun

car.Sg.Fem-Nom the-boy.**Sg.Mas-Gen** **the-little.Sg.Mas-Gen** **the-blue Sg.Fem-Nom** beautiful

"the little boy's blue car is beautiful."

The above example shows the possibility of adjectival modification in Arabic. So, the proposed semantics leads to a type mismatch between the adjective and the modified head noun. Consequently, we cannot apply the predicate modification or function application semantic compositional rules due to the type mismatch:

(29)




However, the indicated syntactic adjacency requirement between the CS nominal components can be justified in my proposal by the movements of the components to different places in the derivation as shown previously to achieve definiteness inheritance, maintain word order, and allow PF incorporation to take place. Another issue that this proposal encounters is the ambiguity of adjective modification as in Larson & Cho (2003), Partee & Borschev (1998). Adjectival modification of a possessive structure head causes some reading variations depending on what element is being modified, either the head noun itself alone or the possessive relation, as follows:

(30) saja:rat-u al-walad-i **al-qadi:mat-u**
car.Sg.Fem-Nom the-boys.Sg.Mas-Gen **the-old.Sg.Fem-Nom**
"the boy's old car"

The example above is ambiguous due to the readings that are caused by the modification of the adjective *al-qadi:mat-u* "old". In the first reading, the head noun is modified by the adjective. This can be paraphrased as " the old car that is owned by the boy". Based on this reading, "car" is the only element that is modified by the adjective "old". On the other hand, the second reading involves possessive modification, where the adjective modifies the head noun after the relation is established. This reading can be paraphrased as " the car that the boy used to own". It could be a new car, but the relation is not applicable in the present. Consequently, how can these readings be represented in Dobrovie-Sorin and Heller's LFs, where the head noun is always relational (type <e,e>) since it is established in the lexicon?

On the other hand, if the head noun is modified by a restrictive relative clause, the given analysis encounters the same problem where the head noun of the type <e,e> cannot compose with a relativizer of type <e,t>:

(31) saja:rat-u **al-**walad-i **al:ati:** ʔaʕdʒabat-ni
car.Sg.Fem-Nom **the-**boys.Sg.Mas-Gen **which** attracted-me
"the boy's car that attracted me"

In the above, the head of the CS is modified by a restrictive relative clause. How is this modification accounted for with respect to this proposal?

## II. CS Vacuous Determiner

The D head cannot be dispensed with since it is a syntactic head that is attested in the syntactic structures of simple and complex DPs. If it happens to be phonologically null, it still has syntactic and semantic contributions. Therefore, we cannot allow its semantic contribution to be affiliated to the head noun only since nouns generally can be either relational or not, depending on their lexical contribution. It is semantically and syntactical implausible to overwhelm the lexical denotation of a noun by assuming that it can be (in)definite without a D contribution. This hypothesis conflicts with Abney's (1987) theory of definiteness and determiners contributions. As shown in section (2.2.2), definiteness inheritance cannot take place at LF as suggested by their proposals since the CS inherited definiteness feature affects several syntactic elements, such as relativizer presence and absence as well as adjectival (in)definiteness agreement. Yes, the head noun has a distinct morphological form, yet this form can be affected by agreement with little d as indicated in the previous chapter. Overall, we cannot attribute the syntactic and semantic aspects of CS like definiteness inheritance and semantic relations to the bound form morphology of the head noun because there are other factors that could explain these aspects.

## B. Predicate Approach

### • Ouwayda (2012)

Ouwayda criticized the previous analyses. According to her analysis, the CS is an open predicate that is subject to modification and quantification. The head of the CS is relational or bound because of a syntactic factor that modifies, or shifts, its semantic interpretation:

> At this point, the question arises of how the head comes to acquire its relational status. One possibility is that the head of the construct, which typically appears in a bound form (sayyaret, "car," in [19], is the bound form of sayyarah, "car"), is a lexical variant of the corresponding noun, along the lines of Heller (2002). Under this account, the lexicon would contain both the bound form sayyaret and the free form sayyarah, the former being a relational noun of type <e,<e,t>> and the latter a predicate of type <e,t>. Another possibility is that the construct head is syntactically modified, and the bound form of the head denotes not only the noun, but the noun of type <e,t> plus a semantic equivalent of "of" (perhaps the bound function) of type <<e,t>,<e,<e,t>>>, resulting in a relational noun denotation. Although I prefer the syntactic option because of its compositional nature and the fact that it implies a lighter load on the lexicon. (Ouwayda, 2012: 86)

For her, the head noun is composed of an <e,t> noun with a syntactic element such as *of* (denoting a function of type <<e,t>,<e,<e,t>>>) that establishes the relation. For definiteness inheritance, this account suggests that it takes place at the syntactic level via movement of the complement to Spec DP as proposed by Shlonsky (2004) and Fehri (1999) to check the definiteness feature of CS D[28]. The following represent the semantics of the CS in the quoted work:

(32) a. sayyaret l-esteez
car the-teacher
"the car of the teacher"

b. ⟦sayyaret⟧ = λx. λy. y is a car of x
⟦l-esteez⟧ = ιx. teacher (x)
⟦sayyaret⟧ (⟦l-esteez⟧) = λy. y is a car of the teacher
(the predicate that is true of things that are cars of the teacher)
(Ouwayda, 2012: 87)

[28] In her analysis, the D definiteness inheritance is achieved by Spec head agreement (cf. Fehri,1999; Shlonsky, 2004). The NumP (or CardP), which contains both the head and the non-head, should move to Spec DP to check the definiteness feature of the D head. This type of definiteness checking bans the overt form of the determiner because no head noun moves to D, unlike simple definite nouns' structure whose head is specified for definiteness. The latter moves to D to check its definiteness feature and this value is spelled out in the nominal (cf. Borer, 1999). See Ouwayda (2012; 91-6).

With some exceptions, Ouwayda's analysis agrees with my posited analysis regarding treating the CS as a predicate, definiteness inheritance, and the relation between the nominals. Specifically, the latter two points are established by syntactic elements other than the head noun. One drawback of this analysis is that there is no explicit explanation about the location or the nature of the syntactic head or *of* which shifts the head's semantic type. Is it a null preposition or a relational head? Further, the issue of relational nouns was not mentioned in the analysis. Lastly, she presented the M-CS to distinguish the readings of the P-CS without approaching it syntactically and semantically.

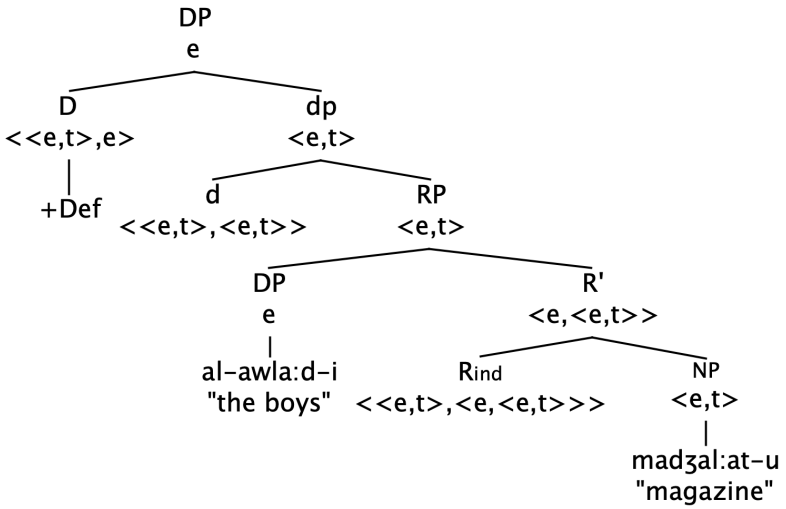
Overall, each surveyed proposals solve parts of the problem, but the issue in its entirety remains unsolved. The predicate approach solves the problem of modifiers and quantifiers that appear in the structure, but it still does not fully explain the nature of the relation by stating the location of the relation, its interactions with possessiveness vs. modification readings and relational nouns. On the other hand, the individual approach might solve the problem of covert definiteness and relations, but it causes problems for quantifiers, modifiers, determiners and the distinction between relational vs. sortal nouns, since all nouns that head a CS are lexically relational due to the bound form. The question for the former accounts is: how can the M-CS be explained syntactically and semantically along the lines of the given proposals?

The only way to answer this question is to adopt the suggestion that I have drawn earlier where both the relation and the definiteness inheritance are established by projections at the syntactic level. Since definiteness inheritance is accounted for in chapter (2), we are left with the question: where is the source of the relation? It was posited earlier that RP is the projection that establishes the relation between the nominals in a CS. The $R_{ind}$ and $R_{Pred}$ are similar in that both can establish relations between nominals and they take the head noun as a sister complement within a CS, but they contrast with respect to the argument that they could take in their specifiers (DP or

NP). For the possessive CS, I assume that the relation is established by $R_{ind}$, which requires its argument to be a DP that denotes an individual as follows:

(33) a. mdʒal:at-u al-awla:d-i
magazine-Nom the-boys-Gen
"the boys' magazine"

b.




c. $[\![R_{ind}]\!] = \lambda P.\ \lambda y.\ \lambda x.\ P(x) \wedge R(y, x)$

According to the LF given above, the distinction between the possessive and modificational CS based on the given analysis is associated with the head R that mediates the relation between nominals. In contrast to $R_{Pred}$ in modificational CS, the possessive CS relation is distinguished by $R_{ind}$ that establishes a relation between the head predicate of the CS and an individual that is denoted by its DP argument.

To sum up, we have approached the modificational and possessive CS based on the relation between their components and the definiteness interpretation. The main prediction of the conducted analysis supports that RP projection establishes the relation between the head predicate and the non-head which can be an NP or a DP. The RP heads cause this syntactic phrasal distinction between non-head arguments. The $R_{pred}$ is the head that selects predicates while $R_{ind}$ selects DPs. At LF the two heads are interpreted differently based on the relation they establish (modification

vs. possessiveness) as well as the type of argument in Spec RP. Now, we are ready to consider the effect of relational nouns on the interpretations of RP in the following sub-section.

## 3.6 Relational Nouns

The issue of sortal and relational nouns and their impact on the semantics of genitives requires closer consideration. The accounts that have considered the semantics of ESG have drawn different compositional relations depending on the lexical denotation of the head noun. Barker (1995, 2011), Partee (2008) and Vikner & Jensen (2002) have distinguished between two sets of nouns in a possessive structure: relational nouns (dyadic) and sortal nouns (monadic). A relational noun such as brother, teacher, sister or birthday behaves like a transitive verb in that it requires a complement. These nouns are inherently relational and have the semantic type <e,<e,t>>. In contrast, nouns whose type is <e,t> are sortal, such as car, dog, cat, and fire. The difference between these nouns can be shown by the following lexical entries:

(34) a. $[\![\text{car}]\!] = \lambda x.\ \text{car}(x)$

b. $[\![\text{father}\ ]\!] = \lambda x.\ \lambda y.\ \text{father}(x, y)$

As can be seen, *father* is intrinsically relational since it denotes a function from individuals to a predicate while *car* is a sortal noun that denotes a predicate. Since the difference between the two types has been distinguished, let us consider their impacts in our proposal.

### 3.6.1 Genitives with (Non-)Relation Heads

Theories that approach the ESG and other genitive structures differ with respect to the lexical denotations of nouns and the contribution of the semantic relations. For instance, Partee (2008) posits two scenarios for ESG depending on the semantics of the head noun, whether it is sortal or relational. For the former type, the non-head together with the genitive *'s* in Spec DP/NP[29] are

[29] Partee did not provide an explicit syntactic analysis whether the possessor merges in Spec DP or in Spec NP because her concern is to account for possessives from a compositional point of view. Instead, she adopts Montague-style labels for phrases such as CN, TCN to avoid syntactic commitments.

interpreted as a relational modifier for the head with a free R(elation) as in (a) below. Regarding the second scenario where the head is relational, the same concept of the syntactic modification is present, but compositionally, the relational head noun takes the non-head as an argument as shown in (b). For this scenario, the genitive *'s* denotes an identity function (vacuous) which is replaced by the lexical relation that is denoted by the head noun:

(35) a. ⟦Mary's car⟧
⟦Mary's⟧= λP. λx. P(x) ∧ R(Mary,x) (Free Relation)
⟦car⟧= λy. car(x)
⟦Mary's⟧(⟦car⟧)=λx. car(x) ∧ R(Mary,x)

b. ⟦Mary's father⟧
⟦Mary's⟧ = λR.λx. R(Mary,x) or λR. R(Mary) (Lexical Relation)
⟦father⟧ = λx. λz. father(x,z)
⟦Mary's⟧(⟦father⟧) = λz. father (Mary,z)

As can be seen, the interaction of lexical relations and the free R relation distinguishes the readings and the semantic compositionality. An analogous solution with some syntactic and semantic notational variations is proposed by Barker (1995, 2011). Despite the minor differences between the analyses, they share many aspects in that the possessive free relations are permitted if the head noun is sortal. Otherwise, the lexical relation is required.

The point that connects to the current enterprise is how the above proposals impact the RP projection, since it establishes a semantic relation between the nominals within a CS. Is this projection needed if the possessum is relational? Or does it have to be present while it is semantically vacuous if the noun itself can take an argument? For me, I think the RP projection is required when the noun is inherently relational. Let us consider the following sub-section to support this hypothesis.

### 3.6.2 $R_{ind}$ & $R_{pred}$ vs. Free & Lexical Relations Ambiguity

As indicated by Barker (1995, 2011), Partee (2008) and Vikner & Jensen (2002), relational nouns always have the semantic type <e,<e,t>>. This implies that whenever a noun of this type heads a genitive structure, its lexical relation is required. However, this is not always the case because, in some contexts, this kind of noun can be used in a genitive structure (CS or ESG) with pragmatic relations beyond their intrinsic lexical relations. Therefore, when it comes to the interpretations of a CS with a relational noun, we may encounter four possible readings: i. Modificational vs. Possessive ii. Lexical vs. Free relation:

(36) a. dʒaʔa mʕl:im-u ridʒa:l-in
came teacher-Nom Indf-men-Gen
"a man's teacher came."

b. Possible interpretations of the CS:
   i. A teacher who teaches men only: M-CS+ Lexical R
   ii. A teacher of some men: P-CS + Lexical R
   iii. A teacher who likes to work for men: M-CS + Free R
   iv. A teacher who works for some men: P-CS + Free R

All the above are possible interpretations of this CS, depending on the context. These readings can be shown in the following logical forms by showing how the noun teacher can be interpreted in each case:

i. =λP. λx. teacher (P,x)

ii. = λy. λx. teacher (y,x)

iii. = λP. λx. teacher(x) ∧ R(P,x)

iv. = λy. λx. teacher (x) ∧ R(y,x)

All the above are possible interpretations for the relational noun *teacher* in the CS. Do we need to list these as possible interpretations in the lexicon and have the context determine which interpretation is required? Also, there is another fifth non-relational interpretation for the same word in simple DPs. In fact, if we assume this, this assumption is going to overwhelm the lexicon with these denotations. What we need here is some syntactic and semantic apparatus that allows us to capture these readings without resorting to the lexicon.

### 3.6.3 Resolving the Ambiguity

To resolve the raised ambiguity above, we need to rely on syntactic and semantic factors to avoid the shown various interpretations for relational nouns and to have a uniform analysis for (non-)relational nouns. First of all, the RP projection should dominate these nouns for the following reasons:

- This projection's heads are capable of selecting different argument types in their Spec ($R_{pred}$, $R_{ind}$).
- It is the locus of the free R despite the lexical differences between nouns.
- Also, it is sensitive to lexical relations in that its relations can be lexically determined.

Based on the above, this projection is required in genitive structures and it could be argued that the RP head is a flexible head in that it can take a lexically relational noun as a first argument to feed its relation. On the other hand, it can contribute a free relation if its complement is a sortal noun:

(37) **Sortal** <e,t>

a. kita:b-u at$^{\varsigma}$-t$^{\varsigma}$ula:b-i
book-Nom the-students-Gen
"the students' book"

b. $[\![R_{ind}]\!] = \lambda P.\ \lambda y.\ \lambda x.P(x) \wedge R(y,x)$ [P is a variable over predicates]
$[\![R_{ind}\ book]\!] = \lambda y.\ \lambda x.\ book(x) \wedge R(y,x)$

(38) **Relational** <e,<e,t>>

a. mʕl:im-u atˁ-tˁula:b-i
teacher-Nom the-students-Gen
"the students' teacher"

b. $[\![R_{ind}]\!]$= λR. λy. λx.R(y,x) [R is a variable over lexical relations]
$[\![R_{ind}$ teacher$]\!]$= λy. λx. teacher(y,x)

The examples above show the posited flexibility that is required to account for this dilemma. If we assume this, we will avoid proposing different types or new projections for each noun's lexical contribution. The same flexibility applies to the $R_{pred}$ head. The above can solve the compositional problem that is shown in (36) (i&ii). Now, we are left with one type reading where the head is relational, but the relation is determined contextually (free R) as in (36) (iii&iv). This can be shown by the following example:

(39) mʕl:im-u fahd-in
teacher-Nom Fahd-Gen
"Fahd's teacher: he teaches Fahd or he works for Fahd"

The free relation can be shown semantically by shifting teacher into a sortal noun (detransitivizing) (Barker, 2011; Partee, 1987). This can be achieved by binding the possessor variable that is contributed by the relational noun by ∃. The reading, after the shift, can roughly be interpreted as "the teacher of something/someone". Next, we can combine it with $[\![R_{ind}]\!]$ or $[\![R_{pred}]\!]$ for non-relational nouns as follows:

(40) $[\![Ex]\!]$= λR.λx.∃y[R(y,x)] ($[\![$teacher$]\!]$)
$[\![R_{ind}]\!]$ ($[\![$teacher$]\!]$) = λP. λy. λx.P(y) ∧ R(y,x) (λz.∃v[teacher (v,z)])
= λy. λx. ∃v[teacher (v,x) ∧ R(y,x)]

The above solution can help to avoid the assumption that relational nouns are ambiguous in that they have different denotations depending on the relations (free or lexical relations) and the type of arguments that they can take (individual or predicate). For us here, RP can have two syntactic

types depending on the external argument (DP or NP). Also, RP heads are sensitive to relations. Accordingly, the relations can be contributed by its sister noun if it is a relational noun or it contributes a free R. Lastly, the semantic shifter of relational nouns allows a CS that is headed by this noun to have a free relation that is determined contextually.

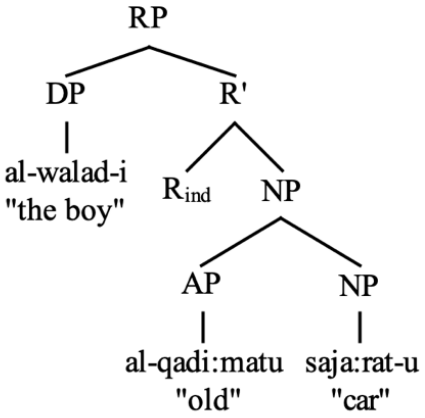
## 3.7 Adjective Modification Ambiguity

It has been highlighted that when an adjective modifies a genitive structure, there will be a semantic ambiguity depending on what element the adjective modifies. Consider the following example that has been discussed earlier:

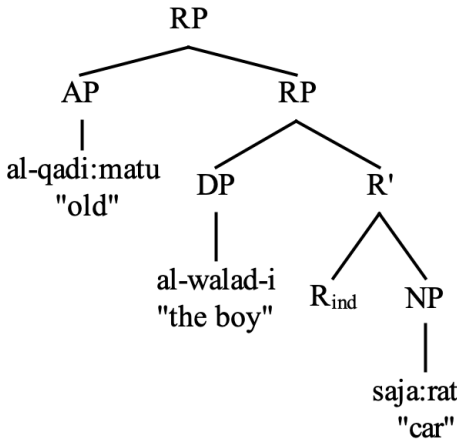
(41) saja:rat-u al-walad-i **al-qadi:mat-u**
car.Sg.Fem-Nom the-boys.Sg.Mas-Gen **the-old.Sg.Mas-Nom**
"the boy's old car"

As indicated, the above example is ambiguous due to the different modification possibilities. More explicitly, *al-qadi:mat-u* "old" can be interpreted as an adjective that modifies "car" or the relation between *saja:rat-u* "car" and its owner, where this relation does not hold in the present. To incorporate this issue on the present analysis of the CS, it can be suggested that each reading has a distinctive syntactic structure based on where the attributive adjective merges. For the first reading, the adjective modifies the head noun *saja:rat-u* "car" only. Therefore, it adjoins to that NP. Regarding the second reading, the adjective adjoins to the RP projection since the modified element is the relation and not the predicate that is denoted by the noun *saja:rat-u* "car". The indicated distinctions can be shown by the following:

(42) a.




b.




The two readings can be shown semantically by the following (cf. Larson& Cho,2003):

(43) ⟦old⟧= λP. λy. old(P) (y)

a.=λy. old(car)(y) ∧ R(ιx.boy(x),y)

b.= λy. old(λz.[car(z) ∧ R(ιx.boy(x),z)]) (y) or λy. old({z: car(z) ∧ R (ιx.boy(x),z)}) (y)

The above shows that the adjective denotes a function of type <<e,t>,<e,t>> that applies to its sister predicate via FA. The different readings of the genitive CS depend on what the adjective modifies based on its syntactic location (RP or NP).

## 3.8 Chapter Conclusion

To sum up, this chapter considers different types of CSs with a great focus in M-CS & P-CS. The difference between these types is attributed to the type of the non-head component of this genitive structure: NP vs. DP. It has been argued that these different categories are selected by different relational heads: $R_{pred}$ vs. $R_{ind}$. As indicated, either one can head the RP projection that mediates the relation between nominals within a CS. Additionally, the issue of relational nouns and their interactions with RP was approached to understand how these nouns affect the semantic interpretations of relations: lexical vs. free. It was shown that RP heads are sensitive to relational nouns in that their relation can be determined lexically or contextually. Overall, the current and the previous chapters cover all the critical points regarding the nominal CS. In the next chapter, the issue of Arabic quantifiers and their domains is going to be approached.

# CHAPTER (4) Quantificational Construct State

## 4.1 Introduction

In the previous chapters, the discussion has focused on nominal CS relations and the impact of (in)definiteness on its components. In this chapter, the investigation is directed toward the MSA Quantificational Construct State (QCS henceforth). Semantically, most quantifiers that occur in a CS structure are strong (presuppositional). Syntactically, these quantifiers behave differently from their English counterparts in that they are not determiners, but they are heads of a genitive structure. Pre-theoretically, the quantifiers that head a CS can be viewed as prenominal modifiers like Arabic prenominal adjectives. They require a covert definiteness value and a case from the clause. The complement (or domain restriction (DR)) appears with genitive case and an overt definiteness value. Another point is that if there is a partitive relation between the quantifier and its DR, which is expressed by *mina* "of", it should be covert in QCS since all the relations within this structure lack a PF form. To have a better view, consider the following examples that show the difference between English and Arabic quantified nominals:

(1) a. dʒa:ʔa **kul:-u** **tˤa:lib-in**
came **every**-Nom Indf-**student**-Gen
"every student came."

b. dʒa:ʔa **dʒami:ʔ-u** **/kul:-u** **/ muʕðˤam-u** **/ baʕdˤ-u** **atˤ-tˤula:b-i**
came **all**-Nom **all**-Nom **most**-Nom **some**-Nom **the-students**-Gen
"all/most/some of the students came."

(2) a. **Every student** came.
b. **Some /most /all of the students** came.

If the above examples (1)(a&b) are compared to their English counterparts in (2)(a&b) it can be noticed that the quantificational systems of these two languages differ with respect to the syntax of the quantifiers and their DR since Arabic quantifiers form a genitive structure, while English quantifiers do not. More specifically, the Arabic quantifier *kul:* "every" in (1)(a) is the head of a CS that takes the indefinite singular noun *tˤa:lib-in* "a student" as its restriction, in contrast to the English example in (2)(a), where *every* is assumed to be a determiner that takes a singular bare noun as its restriction. The same pattern can be seen when we look at (1)(b) and (2)(b), but the difference here is that the DR of the quantifiers *dʒami:ʔ-u* "all" *kul:-u* "all" *muʕðˤam-u* "most" and *baʕdˤ-u* "some" is a definite plural noun *atˤ-tˤula:b-i* "the student" with no partitive preposition. In contrast, the English counterparts require an overt partitive preposition, in most cases, when a definite DP restricts these quantifiers. Another difference is that the DR of Arabic quantifiers appears with genitive case because it is the complement of a genitive structure, in contrast to English.

Regarding definiteness, quantifiers of Arabic are distinguished for this feature morphologically. Like other modifiers, they acquire this feature syntactically from nouns that are specified for this feature in the lexicon when they merge in a derivation. To show the indicated definiteness marking on the quantifier, we can elide the DR noun, or we can use the free state form with an overt partitive preposition:

(3) **QCS Elided DR**

a. dʒa:ʔa **kul:-un** ~~**tˤa:lib-in**~~
came **every**-Nom ~~Indf **student** Gen~~
"each came."

b. dʒa:ʔa **al-kul:-u** ~~**atˤ-tˤula:b-i**~~
came **the-all**-Nom ~~**the-students** Gen~~
" all came."

(4) **Free State**

a. dʒa:ʔa **kul:-un** ~~**tˤa:lib-in**~~ / ~~**waħid-in**~~ **mina** **atˤ-tˤula:b-i**
came **every**-Nom ~~Indf~~ **student**-~~Gen~~ ~~**one**-Gen~~ **of** **the-students**-Gen
"each of the students came."

b. dʒa:ʔa **al-kul:-u** **mina** **atˤ-tˤula:b-i**
came **the-all**-Nom **of** **the-students**-Gen
"all of the students came."

In(3), the definiteness values on the quantifiers are marked overtly by eliding the DR noun. The distributive *kul:every / each* is indefinite because it is bare and has the Tanween /-n/ which indicates that this lexical item is free morphologically. In contrast, the quantifier in (b) is syntactically definite. This overt distinction can be attributed to the impact of ellipsis that takes place after the definiteness inheritance. With respect to (4), the free state form requires the overt value of definiteness on the head, similar to the nominal CS.

Based on the above data, the upcoming presentation of this chapter approaches the following points regarding QCS:

- Syntactic and LF forms of QCS, and how they differ from the nominal CS
- Influence of genitive structure on quantification
- The source of the relation between a quantifier and its domain within a CS
- Difference between (non-)partitive quantifiers in a QCS
- Semantic and syntactic type of the DR: DP or NP
- Definiteness contribution on quantified nouns within a QCS
- Collective and distributive entailments of the universal quantifier *kul:,* and its semantic implications

The chapter starts with an introduction to generalized quantifiers and some related notions such as partitivity, plurality, and other concepts. Understanding these notions prepares us to approach MSA QCS, which will be tackled in the second half of this chapter. Before we end our introduction, I would like to introduce the set of quantifiers that will be targeted here:

**Table 2. QCS Quantifiers**

| | Quantifier | Meaning |
|---|---|---|
| **1** | *kul:* | "every/each/all" |
| **2** | *dʒami:ʔ* | "all" |
| **3** | *baʕdˁ* | "sm" "some" *weak & strong* |
| **4** | *muʕðˁam* | "most" |

## 4.2 Generalized Quantifiers & Cross-linguistic Variations

The history of quantifiers in the semantic field can be traced to Aristotle's relational view of Aristotelian logic (syllogistics) (H&K, 1998). Then, the early semantic works of the philosophers Frege (1892) and Russell (1905) showed how to translate quantificational sentences that contain either a quantificational subject or object into first order predicate logic. Later, Montague (1973) showed how to make the logical translation map more clearly onto the syntax of natural languages. Eventually, Montague inspired Barwise and Cooper (1981) (B&C, henceforth) to introduce their Generalized Quantifiers Theory. Since then, the theory has become one of the influential theories in the field of formal semantics that inspired many semanticists to pursue this phenomenon.

What is relevant to our discussion here is the quantificational determiners whose denotations establish a relation between two sets of individuals (DR and scope). A quantificational determiner has the semantic type <<e,t>,<<e,t>,t>> that denotes a function from sets to a set of sets (generalized quantifier or second order predicate)[30]. These determiners take their sister NP (restriction) and VP (scope) predicates as arguments to establish a relation between the members of

[30] The generalized quantifiers *everything, something, nothing* range over the domain D of individuals as restriction. In contrast to the quantificational determiner, they are not restricted by a property which is a subset of this domain.

these sets, and return a truth value. To have a clearer concept about the denotations of these quantifiers semantically, consider the following basic introduction:

**Table 3. Quantificational Determiners**

| | **Q (A) (B)** | **Set Relations** |
|---|---|---|
| a. | Every/all/each (A) (B) | $A \subseteq B$ |
| b. | Most (A) (B) | $\|A \cap B\| > \|A - B\|$ |
| c. | Both (A) (B) | if $\|A\|=2$, $A \subseteq B$; otherwise undefined |
| d. | The (A) (B) | if $\|A\|=1$, $A \subseteq B$; otherwise undefined |
| e. | Num (A) (B) | $\|A \cap B\| = n$; where n is numeral |
| f. | No A is B | $A \cap B = \varnothing$ |
| g. | Some/a (A) (B) | $A \cap B \neq \varnothing$ |

Every quantifier ranges over subsets of the domain D to establish relations between two sets of individuals, A and B. The quantifiers from a-d are known to be strong due to their presuppositional nature, in that they presuppose the existence of their DR set of individuals, while the others are weak since they are presuppositionally ambiguous (Milsark, 1976; Diesing, 1992; Reinhart, 1997; H&K, 1998; and many others). The presuppositional aspect is an essential aspect for quantificational interpretation involving functions of type <<e,t>,<<e,t>,t>>, while the weak ones are ambiguous between quantificational and modificational (or cardinal) interpretations of type <<e,t>,<e,t>> as indicated in chapter (2). The weakness of this type of determiner can be shown by the ability of a weak determiner to appear in *there is* existential sentences, in contrast to the strong ones, as follows (Milsark, 1976):

(5) a. There is (are) a/one/some/many/few/no man (men).
b. *There is (are) every/all/each most/the/both man (men).

The above examples show that the strong quantifiers are barred from occurring in this structure since they are inherently presuppositional. The existence assertion conflicts with the presuppositional aspect of the strong determiners. On the other hand, the occurrence of a nominal headed by a weak determiner is felicitous due to the stated ambiguity of this type of determiner. Another example cited in H&K (1998:172) emphasizes the difference:

(6) If you find every/most/many/no/three mistake(s) in this report, I will give you a fine reward.

The strong determiners *every, most,* convey to the hearer the presupposition that there are mistakes which he has to find. However, the use of the weak ones may not require the existence of any mistake because there might be none. [31] To summarize, the two main points that have been established here about the dyadic quantifiers are as follows: (a) B&C (1981) indicate that they are syntactically determiners that range over predicates (NP *DR* & VP *scope*), (b) these quantifiers can be categorized as strong or weak based on their presuppositional aspect.

### 4.2.1 Domain Restriction and Cross-Linguistic Variation

In the previous section, we came to two points regarding the DR of a quantifier, namely the presupposition (among strong determiners) that the DR is non-empty as well as its predicational syntactic category (NP) in that it should denote a property of type <e,t>. However, the classical GQ (B&C,1981) theory does not provide an explanation for what restricts the DR in that this set does not include all individuals in the universe of whom this predicate is true, as follows:

**Context:** Some college students threw a party yesterday. The speaker may say:

(7) Every student had a good time.

[31] See H&K (1998) chapter (4) for more information.

The universal quantificational determiner *every* in sentence (7) does not quantify over all the students in the universe. In fact, it quantifies over a restricted set of students who attended the party. The context limits the quantification over those salient individuals only. von Fintel (1994) and others propose the existence of a null syntactic and semantic operator, namely a contextual set that limits the domain of quantification[32]. More explicitly, there is a null (C)ontextual variable in the structure which accomplishes this restriction (explicit technique) as follows:

(7)' every [student $_c$] had a good time.

Put simply, the contextual c variable, at LF, is going to be mapped to a salient property like *in the party* that intersects with the set of *students* to restrict the domain of quantification {x: student (x)}⋂{x: in the party (x)}. This method explains one side of the coin for restricting DR NPs.

On the other hand, quantifiers can be restricted by PP (Partitive or PartP: P+the NP) like *some, most, or all of the students* where they quantify over subsets of a salient plural individual which is contributed by the definite plural noun in PartP DR (B&C, 1981; Ladusaw, 1982; Hoeksema, 1996; Barker, 1998):

(8) a. some/most/all of the students

b. ⟦of⟧= λy. λx. x≤y

⟦Some of the students⟧= λQ. ∃x[ x≤ιy.*student(y) ∧ Q(x)]

The logical form in (b) represents a quantificational structure where the quantifier DR is a partitive whose members are restricted contextually by the contribution of the definite determiner *the students*. Based on the literature of English quantifiers, the domain is either restricted covertly by a contextual variable or an overt partitive form. Syntactically, both PartP and NP should be predi-

[32] See Partee (1987), von Fintel (1994), Stanley & Szabó (2000), Stanley (2002), Matthewson (2001), Giannakidou (2004), Recanati (1996), Schwarz (2009) and Szabolcsi (2010) for different implementations.

cates that denote a semantic property, in addition to the assumption that quantifiers are syntactically determiners that take these elements as a first argument.

In fact, some cross-linguistic quantified nouns may conflict with the former claim which requires the quantifier DR to denote a type <e,t> semantic property. Arabic, Hebrew (Shlonsky, 1991; Gil, 1995; Francez & Goldring, 2012), Basque, Modern Greek (Giannakidou, 2004; Etxeberria, 2005, 2008; Etxeberria; Giannakidou, 2009, 2019), and St'át'imcets Salish (Matthewson, 2001) have shown that quantifiers (mostly strong) can be distinguished for definiteness, or that their DR is not an NP, but rather a DP which combines with a quantifier directly without the appearance of the partitive preposition intervening between the quantifier and its DR DP:

(9) **St'át'imcets Salish**: (Q D+NP+D)[33]:

a. takem i smelhmulhats-a
all DET woman(PL)-DET
"all of the women"

b. zí7zeg's k' wemk'úk'wm'it-a
each DET.PL child(PL)-DET
**lit.trans**."each the women"

c. cw7it i smelhmúlhats-a
many DET.PL woman(PL)-DET
"many of the women"

(Matthewson, 2001:146)

(10) **Basque: Head-Final Language** (NP Q+D):

a. mutil guzti-ak
boy all-the.pl
"all of the boys"

[33] In this language, (in)definiteness is not distinguished morphologically. The same determiner expresses both meanings. This aspect will be discussed later.

b. mutil bakoitz-a
boy each-the.sg
"each boy"

c. ikasle gehien-ak
student most-the.pl(abs)
"most of the students"

(Etxeberria, 2005:37)

(11) **Modern Greek: (D Q (D) NP)**:

a. oli i fitites
all the.pl students
"all the students"

b. o kathe fitites
the.mas.sg every student
"each student"

c. i perissoteri (i) fitites
the most (the) students
"most of the students"

Giannakidou (2004:116)

(12) **Hebrew (Q+D+NP):**

a. kol ha-ʔ anasim
all the-men
"all (of the) men"

(Gil,1995: 331)

b. kol is
every Indf-man
"every man"

c. rov ha-yladim yesenim
most the-boys sleep
"Most (of the) boys are sleeping."

(Francez & Goldring, 2012: 350)

This type of data shows that the (in)definite determiner can combine with either the quantifier, its domain noun or both. Such combinations raise syntactic and semantic questions about the classical generalized quantifier hypothesis that quantifiers are determiners because, now, we see that they co-occur with other determiners without a partitive relation. In addition, these patterns conflict with the hypothesis that the first argument has to be a set rather than an individual.

### 4.2.2 Definiteness Contribution

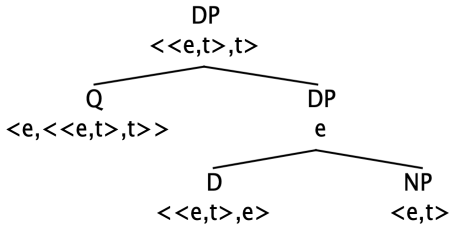
The foregoing data has established a debate about the interpretation and the distribution of D in a quantified noun structure. It has been shown that definiteness is an element that languages may require in a quantificational structure. With respect to this issue, there are two main streams regarding quantification and definiteness effects. Matthewson (2001) posits that the generalized quantifier classical interpretation of quantifiers should be reconsidered to account for the influence of definiteness on DR. In contrast, Giannakidou (2004), Etxeberria, (2005, 2008), and Etxeberria and Giannakidou (2009, 2019) argue against the former by enriching the structure with elements to ensure that a quantifier is restricted by a set rather than an individual. In the following, both proposals will be considered with more details:

- **Matthewson (2001)**

The main claim of this work casts doubts on the main argument of B&C (1981) about generalized quantifier denotations by proposing that a quantificational determiner's first argument should be a DP that denotes an individual rather than a predicate that denotes a set. Accordingly, determiners should denote functions from individuals to generalized quantifiers (type

<e,<<e,t>,t>>) rather than functions from predicates to generalized quantifiers (type <<e,t>,<<e,t>,t>>) due to her findings about quantified nouns in Salish and some supportive data from English. Based on this hypothesis, this claim supports the explicit method of DR hypothesis (von Fintel, 1994), which requires the existence of a covert syntactic element which contributes this contextual domain narrowing. For her, the overt contextual element, in this case, is the definite noun due to the definiteness presupposition. Accordingly, the process of getting from NP to a generalized quantifier involves two steps rather than one step. The first step is to combine NP with a D to restrict the domain, and then the whole DP is an input for the quantificational determiner as follows:

(13) a. zí7zeg's i smelhmúlhats-a (Salish)
each DET woman(PL)- DET
"each of the women"

b. 


Before showing the semantic interpretation of the above LF, we should keep in mind that this language does not distinguish (in)definite nouns by different forms of the determiners. However, both interpretations are unified under one morphological article which is a circumfix that a noun acquires by head movement to D. Semantically, the D is interpreted as a Skolem choice function that maps a set into an individual[34]:

(14) a. $[[X \ldots a_k]]^g (⟦\text{smelhmúlhats}⟧) = \lambda P.\ (g(k))(P)$ (⟦*Women⟧)

b. ⟦zí7zeg'⟧ (⟦i smelhmúlhats-a⟧) = $\lambda Q.\forall x[x \leq f(⟦*\text{women}⟧)\ [\text{atom}(x) \rightarrow Q(x)]]$

[34] Equivalent to iota, it denotes a partial function of type <<e,t>,e> . Here, the assignment function g maps the variable g(k) to a choice function that applies to the predicate NP.

In the above, the quantifier is restricted by a DP. In this case, it quantifies over subsets of an individual sum. Here, the universal distributive quantifier *zí7zeg'* "each" quantifies over the atomic subsets of the plural individual picked by the choice function. In other words, under this hypothesis, a quantifier is inherently partitive since it takes an individual as a first argument. Additional supportive points for this analysis come from English optionality of the PartP *of* as in (15) and the kind denotation of bare plurals in the domain of the quantifiers *all* and *most* in generic contexts, as in (16)-(19)[35]:

(15) *"of"* Optionality
   a. all (of) the women
   b. both (of) the women
   c. half (of) the women

(16) a. All desks are brown.
   b. #All pages in this book were torn.

(17) a. All the girls went to the gym.
   b. #All girls went to the gym.

(18) a. I admire all linguists.
   b. ? I talked to all linguists.
   c. I talked to all the linguists.

(19) a. I admire most linguists.
   b. #I talked to most linguists.
   c. Most linguists are millionaires.
   d. #Most linguists went to New Zealand for Christmas last year.

Matthewson proposes that the optionality of the preposition *of* in (15) indicates that it is semantically vacuous. It merely contributes case to the DR DP. On the other hand, the kind reference of the bare plural NPs in (16)-(19) denote a type e expression semantically, like a definite DP in (15)

[35] Matthewson cited (16) & (17) from Partee (1995) & Brisson (1998).

(Carlson, 1977; Chierchia, 1998) despite the reference difference between the definite DP and the kind reference NP. This claim supports the implication that a nominal of type e is the element that restricts a quantifier. Thus, the contribution of the quantifiers here is to add an additional meaning to the DP reference. However, the shortcoming of this proposal is that it cannot be extended to *every* in English, which requires an NP as restriction rather than a DP[36] .

- **Giannakidou (2004), Etxeberria, (2005, 2008) and Etxeberria and Giannakidou (2009, 2019)**

These works argue against Matthewson's proposal that a quantificational determiner is inherently partitive. They defend the generalized quantifier classical theory account according to which a quantificational determiner has the semantic type <<e,t>,<<e,t>,t>>. Generally, they propose that the findings of Matthewson (2001) are inconsistent for various reasons. First of all, the definite noun cannot combine directly with a quantifier without PartP "*of"*, since the partitive preposition has semantic import and is semantically contentful (cf. Ladusaw, 1982). As opposed to *most* and *all,* other quantifiers cannot combine directly with a definite DP:

(20) a. *every the boy
b. *most the boys
c. *few the boys
d. *three the boys
e. all/only the boys

The examples above show that only *only & all* can combine directly with definite domain restriction nouns. In fact, other quantifiers cannot since there is a requirement of the partitive preposition between these components. For *only & all,* Giannakidou (2004) adopts Brisson (1998), for *all*, and von Fintel (1997), for *only*, in that they are not truly determiners. Nevertheless, they can

[36] Matthewson admits this problem at the end of her work (section 7: 182).

be considered as modifiers. As indicated by Giannakidou, Salish lacks the PartP counterpart which implies a covert partitive (or shifter) requirement to contribute the partitive meaning. With regard to the optionality of that PartP *of* , as in (15), it might be some other factors that affect its overt form, but its semantic content is still present.

The contribution of the cited works, regarding the definiteness that combines quantifiers, their DRs or both concurrently, suggests that it contributes a contextual set that restricts the DR despite where the determiner occurs. They follow Westerstahl's (1985) hypothesis that the definite determiner is a generalized quantifier that contributes a contextual set. If the DR is a definite DP, there has to be a partitive *of* that shifts the semantic type of the generalized quantifier to a predicate (cf. BE or Id shifters as in Partee, 1987)[37] to allow the upstairs quantifier to combine with a restricted predicate. When a language lacks this preposition, a type shifter can occur in the derivation covertly. On the other hand, when the determiner precedes the quantifier, it is interpreted as a complex determiner where the quantifier contains the contextual variable. The same solution has been developed in the recent works of Etxeberria and Giannakidou (2009, 2019). They propose that D is ambiguous between a saturation meaning *iota* and the $D_{DR}$ (modifier) which restrict the domain as follows:

(21) Two types of $D_{DR}$

a. $D_{DR<<e,t>>,<<e,t>>}$ with DR NP for Salish:
$[\![D_{DR}]\!] = \lambda P.\ \lambda x.\ (P(x) \cap C(x))$; P is a variable over predicates.

b. $D_{DR<<<e,t>,<<e,t>,t>>,<<e,t>,<<e,t>,t>>>}$ with quantifiers as in Basque & Greek:
$[\![D_{DR}]\!] = \lambda Z\ .\lambda P.\ \lambda Q.\ Z\ (P \cap C)\ (Q)$; Z is the relation denoted by the input quantificational determiner.

[37] BE: <<e,t>, t>→ <e,t> : λP. λx.[{ x }∈P]
Id: e→ <e,t> :λy.λx [x=y]

As shown by (21)(a&b), the main contribution of the modified interpretation of the D that combines with either the DR or the quantifier itself is to contribute the contextual C variable that restricts the domain of quantification. Overall, the main concern of the above works is to explain the interpretation of definiteness on the quantifiers and their domains. Their main argument is that a quantifier's semantic type should not be altered, but the definite determiner denotation is the one which can have different interpretations.

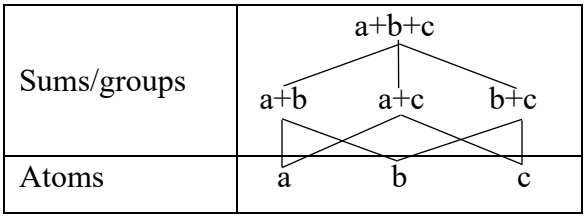
## 4.3 Digression on The Semantics of Plurals and Partitives

The following subsections are critically essential for the analysis of CS quantifiers since most QCSs are partitives. Therefore, there is a need to understand the semantic denotations of partitives and plurals before tackling the main issue of this chapter.

### 4.3.1 Plurals

With respect to the semantics of plurals, Link (1983) proposes an influential algebraic semantic theory for plurals and mass noun interpretations. He argues that the domain of individuals forms a complete join semilattice that is closed under the individual-sum (or i-sum) relation, which is partially (mereologically) ordered by the ≤ operator. This enriched domain contains both the atomic individuals and their sums. Different nouns can range over different types of individuals. To explore this semantic theory, let us assume that our domain consists of three boys: *Alfred* (a), *Bob* (b), and *Christopher* (c). Accordingly, the domain can be represented by the following:

**Table 4. Link (1983) Semilattice**




- The ≤ relation is represented by lines in the semilattice:

i. a ≤ a+b, a+c ≤a+b+c

ii. $b \leq a+b,\ b+c \leq a+b+c$

iii. $c \leq a+c,\ b+c \leq a+b+c$

The lowest row of the above table shows the reference for the atomic individuals a, b, c. The upper row represents the non-atomic sums of the natural language binary conjunction *Alfred and Bob*, which is modeled as a+b…etc. The trinary conjunction of *Alfred, Bob and Christopher* is the sum a+b+c which is called the maximality or the upper bound in our domain. Also, Link defined the plural operator ⟦*⟧ that maps a non-empty predicate P to its sums *P. Based on the given analysis, singular and plural noun denotations can be distinguished as follows:

(22) a. ⟦boy⟧= {a,b,c}

b. ⟦boys⟧= ⟦*boy⟧= {a, b, c, a+b, b+c, a+c, a+b+c}

As shown, the asterisk denotes a function that maps a singular predicate *boy* to its sums *boys*. It is the extension of the morphological plural marker in natural language that inflects predicates. Respectively, the singular noun *boy* denotes a set of atoms, and the plural counterpart set includes the sums and maybe the atoms if we follow the inclusive view of plurals (Chierchia, 2010 & Champollion, 2017)[38]. More explicitly, if *Alfred is a boy, Bob is a boy, and Christopher is a boy*, here, each predicate maps an atomic individual to a truth value. For plural predication, *Alfred, Bob, and Christopher are boys*, the extension of this plural predicate can be represented *boy (a+b+c). Here, the predicate is true of sums rather than an atomic individual. Overall, these are the terms and the notations which are relevant for our upcoming discussion.

### 4.3.2 Partitives

In the previous sections, PartP has been introduced as an alternative to NP for restricting the domain of quantifiers. The starting point for analyzing this syntactic form is the debate of

[38] Chierchia (2010) and Champollion (2017), in contrast to Link (1983), emphasize that the plural set should include plural sums and atoms as shown (inclusive hypothesis). The following is one example that supports this claim :

a. there are no boys in the house.

The existence of one or more boys will make the sentence false.

Jackendoff (1977) and Selkirk (1977) in the late seventies. The findings of these works, especially Jackendoff (1977), were implemented in formal semantic works to account for its occurrence in the domain restriction position (B&C, 1981; Ladusaw, 1982; Hoeksema, 1996; Barker, 1998; Sauerland & Yatsushiro, 2004; Falco & Zamparelli, 2019):

(23) Most of the students

The above quantifier is restricted by the PartP *of the students* instead of an NP. With respect to this structure, two main points are relevant to the current enterprise: the partitive constraint for the nominal argument of PartP, and the element that contributes the predicate denotation to the upstairs quantifier.

For the partitive constraint, the post-partitive preposition noun has to be a definite DP, to distinguish partitives from pseudo-partitives. Semantically, a partitive denotes a part of an object or material which is salient contextually, while a pseudo-partitive is a quantity of non-specific substance or material, so definiteness is not required. Syntactically, these two forms differ when they follow a noun. The real PartP, whose argument is a definite DP, is a complement of that noun: [NP[PartP[DP]]]. Regarding pseudo-partitives, the same noun is interpreted as the head of a measure phrase projection that modifies the complement NP: [MP [N] [NP]] (Jackendoff, 1977; Stickney, 2007). Consider the following:

(24) a. A stinky cup of juice (Pseudo-partitive)
b. A stinky cup of that juice (Partitive)

The adjective *stinky* in (a) modifies an amount of juice rather than the cup. In contrast, it modifies the cup in the second sentence rather than the juice. Another difference is that quantifiers cannot be restricted by pseudo-partitives as follows:

(25) a. *Most/all of dogs
b. *three of dogs
c. Most/all/three of the dogs

This distinctions between these structures led Jackendoff (1977) to posit the following constraint to distinguish partitives from their pseudo-partitive counterparts:

> **Partitive Constraint**
> In an of-N''' construction interpreted as a partitive, the N''' must have a demonstrative or genitive specifier[39]. (p. 113)

The above constraint has been reformulated semantically in B&C (1981) formally via the notion of a principal filter:

> **Principal Filter**
> M = <E, ⟦ ⟧> and every A for which ⟦D⟧(A) is defined, there is a non-empty set B, so that ⟦D⟧(A) is the sieve {X ⊆ E |B ⊆X}. (Hence, ⟦D⟧(A) is called the principal filter generated by B) (p. 183)

According to B&C, the definite determiner when defined is treated as a quantifier whose domain denotes a non-empty restricted (generator) set B of some set A. This generator set is a subset of all the supersets (scope) that intersect with A:

(26) ⟦The three men⟧ = {X ⊆ E |⟦three men⟧ ⊆X} when men ≠∅ (otherwise undefined)

The hypothesis suggests that the definite noun phrase *the three men*'s generator domain set is a subset of the set of men, whose members are three. This restricted set is a subset of all supersets that intersect with the set of men[40].

Since I am following a presuppositional theory for definiteness, the definiteness is interpreted via the iota operator. The DP argument of PartP should denote an individual that is salient contextually. Then, the preposition of the PartP structure is the element that maps the definite noun

[39] In Jackendoff (1977), the definite determiner is categorized as demonstrative.
[40] See Abbott (1996) for more discussion about principal filter and counterexamples.

(plural individual of type e) to a restricted set of type <e,t>. This set denotes parts of the individual (maximality) to provide the DR for the upstairs quantifier (cf. B&C, 1981; Ladusaw, 1982; Link, 1983; Barker, 1998). Despite the notational variations between the cited works, they share the same idea when it comes to the syntactic element that contributes the PartP predicate:

(27) Some of the books

a. ⟦some⟧ (⟦of⟧ (⟦the books⟧))
⟦of⟧= λx. λy. y≤x
⟦the books⟧= ιz. *book (z)
⟦some⟧ (⟦of the books⟧)= λQ. ∃x[x≤ιz. *book (z)ΛQ(x)]

b. ⟦the books⟧= a+b+c
⟦of the books⟧= { a, b, c, a+b, a+c, b+c, a+b+c }[41]

(a) shows the interpretation of the partitive domain restriction of a quantifier. As illustrated, the PartP preposition *of* denotes a function of type <e,<e,t>> that maps an individual sum to its parts, as shown in (b).

To illustrate, the above are the main concepts and apparatus that will be used in approaching QCS in the upcoming sections. In the following, we will be concerned with the semantic and syntactic aspects of this structure to understand the quantification system of Arabic and the impact of this genitive structure on quantification.

## 4.4 Quantified Construct State

The starting point for looking at QCS is to consider its syntactic configuration, which will guide us toward its semantic interpretation at LF. In the following, some works that approach Arabic quantifiers are going to be presented to understand the syntactic aspects of the QCS. The

[41] Distinctions between proper < and improper ≤ partitives are beyond the scope of the current enterprise. See Barker (1998), Falco & Zamparelli (2019) and Ionin et al. (2006).

ultimate goal is to form a structure which is interpretable semantically and contains all the required elements that affect the interpretation of the QCS.

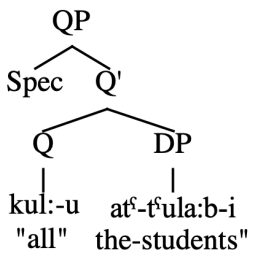
### 4.4.1 Syntactic Form of QCS

- **Shlonsky (1991)**

It has been stated, in the introduction, that Arabic quantifiers cannot be viewed as determiners. However, they can be grouped under a lexical category Q that heads a CS like nominals and adjectives. This claim can be supported by most proposals of the few works that have targeted CS quantifiers. For instance, Shlonsky suggests that quantifiers of Arabic and Hebrew are heads of a QP projection. They take the DR noun as a complement and assign genitive case to that noun, while the quantifier itself bears the case of the whole DP. According to that proposal, QP is an independent projection that is not a complement of D. Consider the following:

(28) a. kul:-u atˤ-tˤula:b-i
all-Nom the-students-Gen
"all (of) the students"

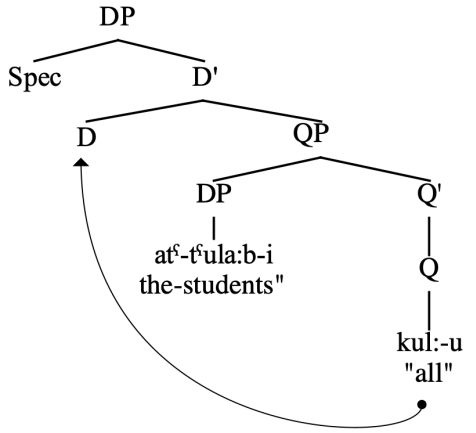
b.




- **Benmamoun (1999)**

Benmamoun modified the former analysis to assimilate the structure of the QCS to its nominal counterpart, as shown in chapter (2), as follows:

(29)




In the above analysis, the quantifier is assumed to be a maximal projection dominated by a DP. Its DR noun merges in its Spec position. Then, Q undergoes head movement to D similar to nominals.

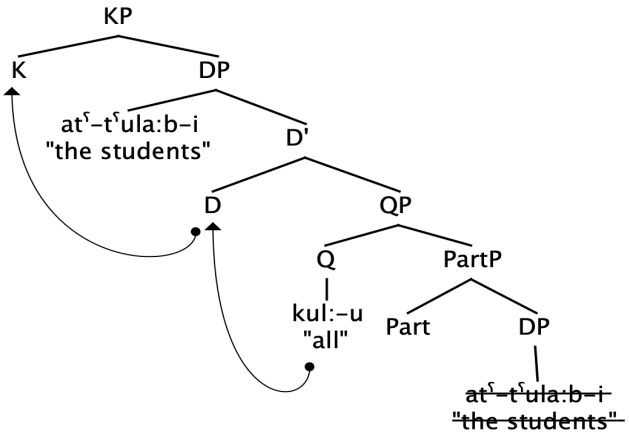
The question for this analysis is what is the semantic contribution of D on quantifiers? As shown, QP is dominated by DP. Generally, definiteness has a semantic impact on nominals but not on any other lexical category. Moreover, if we take the hypothesis of Giannakidou (2004) that definiteness contributes the contextual set for the quantifier, what we have here is that the DR restriction is a DP which is already restricted by definiteness. Consequently, the contribution of D that dominates QP, in this case, has no impact semantically, which questions the D projection in the narrow syntax. This claim is supported by Giannakidou's (2004) suggestion that the DR of a quantifier cannot be restricted twice to explain the case where definiteness combines with both the quantifier and its DR concurrently in Greek, as in (11). Another semantic aspect that is missing from the above proposals is that if we propose that the DR of *dʒami:ʔ-u* "all" *kul:-u* "all" *muʕðˤam* "most" *baʕdˤ-u* "some" is partitive rather than an NP, how can we implement this concept in the above representation? In this syntactic configuration, the DR DP merges in Spec QP.

Overall, the presented analyses of Shlonsky (1991) and Benmamoun (1999) do not provide a lot of details about QCS internal components because the main findings of these works aim to explain the issue of quantifier floating and its interactions with clause structure.

- **Fehri (2018, 2020)**

Another analysis for Arabic quantifiers is proposed by Fehri (2018, 2020). For Fehri the Arabic quantifiers have different forms based on their semantic interpretations and the lexical type of the quantifier. For the collective universal quantifier *kul:$_{all}$* and other partitive quantifiers, he proposes that they behave, with some variations, like a nominal CS. The similarities between these types of CS can be witnessed by the manner of definiteness inheritance, which requires the existence of a null D head. This D acquires the DR DP definiteness feature and transfers it to the head. In addition, the KP (case phrase) projection within QCS explains the correct word order and the clause case assignment. In contrast to a nominal CS, the QCS differs in that it contains a covert PartP (cf. Hallman, 2016) which ensures that the quantifier DR is a predicate rather than an individual. The findings of Fehri can be shown by the following form:

(30)



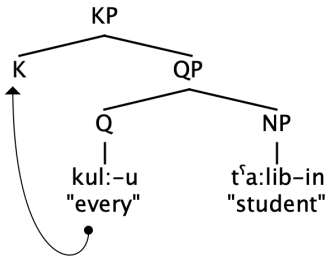

According to the shown form, both the quantifier and its null PartP originate below a DP projection. Then, the definite DP *atˤ-tˤula:b-i* "the students" undergoes movement to Spec DP to fulfill the definiteness inheritance requirement. Next, the quantifier moves higher cyclically to K via head-movement. The proposed null D that dominates QP has two benefits. First of all, the definiteness feature of domain restriction noun, the complement of PartP, is transmitted to the quantifier through spec-head agreement. Also, he claims that when a universal quantifier *kul:$_{all}$* inherits the

definite feature of partitive DR noun, it is interpreted collectively as “all”.

On the other hand, for the universal distributive quantifier, he suggests that it quantifies over a bare (or indefinite) noun. Here, the internal D projection is not required since this quantifier is treated as a determiner:

(31) a. kul:-u tˤa:lib-in
every-Nom Indf-students-Gen
“every student”

b.




What can be seen in Fehri’s analyses is that different quantified nouns require different configurations despite the uniformity of the QCS PF. The drawbacks of these proposals are that when the definiteness feature is inherited from a partitive complement of *kul:*$_{all}$ , there is a D projection, while he does not show how indefiniteness is inherited by the distributive counterpart. Rather, he proposes that D does not project in the distributive context. Secondly, if QP is the topmost projection, as in (31), why is KP required in this situation? For this form, the requirement for KP might not be syntactically motivated because there is no intervening projection that blocks the structural case. Further, Fehri provides incomplete syntactic analysis for distributive *kul:*$_{\text{every/each}}$ with respect to the indefiniteness inheritance for this case. Another point regarding the DP layers and QP projection is that if a D projection can dominate QP as shown, this contradicts his findings on (1999:149) about DP constituents’ ranking, where QP projects higher than any element within DP:

(32) Q>Dem>(D)>Ord>Card>A>N

a. dʒaʔa kul:-u ha:ʔula:ʔi al-radʒa:li
came all-Nom these the-men-Gen
"all of these men came."

b. *dʒaʔa ha:ʔula:ʔi kul:-u al-radʒa:li
came these all-Nom the-men-Gen

c. dʒaʔa kul:-u θala:θt-i radʒa:l-in
came every-Nom three-Gen Indf-men-Gen
"every group of three men came."

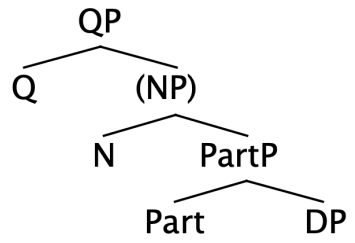
d. *dʒaʔa θala:θt-u kul:-i radʒa:l-in
came three-Nom every-Gen Indf-men-Gen

In that work, he argues that demonstratives, determiners, and NumP project lower than QP. This claim is supported by the ranking of these elements on the above examples. Therefore, for Arabic, it might be inaccurate to assume that quantifiers can be dominated by any projection because none of the DP components can appear before a quantifier.

In the upcoming presentations, a quantifier is viewed as the head of a maximal projection QP. Following (cf. Abney, 1987; Shlonsky, 1991; and others). It agrees with its DR noun for (in)definiteness, even though this inherited value is not interpreted on the quantifier itself since this definiteness is syntactic definiteness, an uninterpretable feature. This feature is needed for agreement purposes like the ones that have been suggested for adjectives[42]. Regarding their DR, quantifiers can be restricted by either PartP or NP and each type of restriction impacts the reading as will be shown:

[42] See chapter (2) for adjectival (in)definiteness agreement.

(33)




In contrast to Jackendoff (1977), Barker (1998) and Sauerland and Yatsushiro (2004), I argue that quantifiers can take partitives as an argument without requiring the existence of null nouns. I propose that NP projection is needed to contribute distributivity when it projects between QP and PartP as will be explained later (cf. Fehri, 2018, 2020). Further, I follow B&C (1981), Ladusaw (1982) and Barker (1998) in that PartP is the locus of the partitive denotation. This element can be spelled out as an overt preposition or it can be a null head. The null PartP projection in CS does not conflict with Chierchia's (1998) proposal that type shifters are blocked by the existence of the overt form since CS structure requires all the relations, including partitives, to be covert.

Lastly, in chapter (3), I have argued that RP is the core of relations between nominal CS components, but the partitive relation between a quantifier and its definite domain differs from the former. The relation between the latter elements is a unitary relation, namely partitive. In other words, RP is a projection that can be interpreted based on the context to establish various relations between nouns, while the relation between a quantifier and its domain is only partitive. Therefore, I will assume a covert counterpart of PartP in the QCS when the DR is a definite plural. The posited syntactic configuration is the starting point for the structural assumptions that will be analyzed semantically in the upcoming discussion[43].

[43] I will abstract from further syntactic implementations of the genitive case. This question is a topic of a debate in the syntactic literature. For instance, Shlonsky (1991) argues that a quantifier is capable of assigning case to its DR nominal. On the other hand, Benmamoun (1999) requires a vacuous D. Siloni (2001) suggests that it is a process that takes place post-syntactically. However, if we want to extend the nominal CS syntactic assumptions to QCS, we could assume the following:

a. [KP [dP[QP kul: [NP walad-in]]]]
b. [KP [kul:+d+k] [dP [NP walad-in] [d'[QP $t_{(g)}$ [~~NP walad-in~~]]]]

In the following, we will consider the main aspects of QCS by distinguishing types of quantifiers based on their DR: PartP (collective) vs. bare noun NP (distributive), which I may refer to sometimes as indefinite since it lacks the definiteness marking. The distinction between these types is critical since each type has different syntactic and semantic aspects despite the uniformity of CS structure that masks their distinctive aspects. In the following, we will start by exploring QCS internal aspects to support the suggested QCS dichotomy syntactically and semantically. Then, each type's aspects will be highlighted in order to understand their semantic contributions and provide an account for QCS.

### 4.4.2 QCS PF Uniformity and DR Semantic Type

As stated previously, the CS syntactic structure masks syntactic and morphological elements that lead toward a complete view of the internal components. For this issue, in the previous chapter, we have distinguished between modificational and possessive CS based on the syntactic category of the complement (DP or NP). These types of CSs are not distinguished morphologically since the complement of both CS types is marked for (in)definiteness overtly, despite their variant syntactic categories.

The same PF masking influences QCS components. This claim can be justified when we consider the difference between the distributive *kul:*$_{\text{each/ every}}$ vs. *kul:*$_{all}$, *dʒami:ʔ* "all", *baʕdˁ* "some" and *muʕðˁam* "most" based on the type of DR. The distributive *kul:*$_{\text{each/ every}}$ can form a CS with a bare noun, but the collectives, *kul:*$_{all}$ and the others, form the same structure with a plural definite noun and a covert PartP relation. To view the difference between these two groups, we need to paraphrase QCSs in a free state form to spell out the internal constituents to show whether the

It can be argued that the complement of the quantifier merges with a definiteness value for which the quantifier and little d have the un-interpretable and unvalued counterparts. Similar to CSs, little d and Q agree (via feature sharing). Then their features are valued by agreeing with DR, which has this feature. In this way, we ensure that case is assigned. Overall, this might be one way for explaining the genitive case assignment. At this point, I opt to leave this question for future work.

complement is PartP or NP, in addition to the definiteness values of the quantifiers:

(34) a. rafadˤ-a **al-**baʕdˤ-u / **al-**dʒami:ʔ-u / **al-**kul:-u / **al-**muʕðˤam-u **mina**
rejected **the-**some-Nom **the-**all-Nom **the-**all-Nom **the-**most-Nom **of**
atˤ-tˤula:b-i al-ħal:-a
the-students-Gen the-solution

b. rafadˤ-a baʕdˤ-u / dʒami:ʔ-u / kul:-u / muʕðˤam-u / atˤ-tˤula:b-i
rejected some-Nom all-Nom all-Nom most-Nom the-students-Gen
al-ħal:-a
the-solution
"some/ all/ most of the students rejected the solution."

c. (al)-baʕdˤ-u / (al-)dʒami:ʔ-u / (al-)kul:-u / (al-)muʕðˤam-u / **(min)-hum**
(the-)some-Nom (the-)all-Nom (the-)all-Nom (the-)most-Nom **(of)-them**
"some/ all/ or most of them"

Example (a) represents the free form of the partitive QCS. The overt definiteness marking on the quantifiers is conditioned by the presence of the overt form of the PartP *mina* "of". On the other hand, (b) shows the CS counterpart of the same Q-NPs, where the relation as well as the definiteness marking on the quantifiers are covert. It can be seen that the same interpretation is represented by two syntactic structures. Similarly, (c)[44] shows the same impact with a referential pronoun. Here the pronoun *-hum* "them" can be cliticized to the PartP preposition in the free state form and the definiteness marking is overt. In a QCS, the pronoun is cliticized to the quantifier with the absence of overt definiteness marking on Q. This can be shown by omitting the elements between the parentheses in (c) to form QCS. Despite the structural variation, these quantifiers' DR is a PartP that can be covert in a QCS or overt in a free state form. These syntactic structural variations

[44] In example (c), the parentheses show the same pattern in (a&b) where the overt definiteness marking on the quantifier is conditioned by the presence of the PartP preposition.

do not impact the semantic interpretation. Another aspect of this group is that they reject any noun intervention between them and their PartP domain:

(35) *baʕdˤ-u / *dʒami:ʔ-u / *kul:-u / *muʕðˤam-u / **tˤula:b-in** mina atˤ-tˤula:b-i
some-Nom all-Nom all-Nom most-Nom **students-Gen** of the-students-Gen

The above example show the unacceptability of any intervener. The placement of a bare noun *tˤula:b-in* "students" between these quantifiers and PartP renders the structure ungrammatical. This implies that these quantifiers take PartP as argument and this aspect explains the adjacency requirement.

Now, let us consider the distributive universal quantifier *kul:*$_{every/each}$. In contrast to its counterpart *kul:*$_{all}$ and other partitive counterparts that appear before a definite plural noun as in (34), it has to be followed by a singular noun or numeral. This quantifier and its nominal DR lack the definiteness marking and always form a CS. No free state form for this type of QCS is available since there is no covert relation between the quantifier and its DR that can be spelled out like the partitive group[45]. When this strong distributive quantifier is restricted by an overt partitive, PartP has to be a complement of an overt or covert NP/Number: [Q + ~~NP/Num~~ + overt PartP] or [Q+ ~~NP/Num~~ + overt PartP]. This ellipsis is traced by Tanween, the suffix [-n], on the quantifier, which indicates that the element that bears this morphological element has been elided:

(36) a. dʒaːʔa **kul:-u** **tˤa:lib-in**
came **every-Nom** **Indf-student-Gen**
"every student came."

[45] The lack of relations of this QCS form can also be supported by comparing it to a nominal CS that is headed by a relational noun like *ibn "son".* This nominal CS can have a free state form with an overt preposition as follows:
*a.* ibnu radʒul-in (CS)
son man
"a man's son"
*b.* ibn-un **li-**radʒul-in (Free State)
son of-the man
"a man's son"
The shift between free and construct state structures is possible with a relational nouns, but not with the distributive *kul:*.

b. dʒa:ʔa **kul:-u** **tˤa:lib-in** **/ waħid-in** **(mina** **atˤ-tˤula:b-i)**
came **every**-Nom Indf-**student**-Gen **one**-Gen **(of** **the-students)**
**lit.trans.**: "every student of the students came."

c. dʒa:ʔa **kul:-un** ~~**tˤa:lib-in**~~ ~~**/waħid-in**~~ **(mina** **atˤ-tˤula:b-i)**
came **every**-Nom ~~Indf-**student**-Gen~~ ~~**one**-Gen~~ **(of** **the-students)**
"each of the students came."

The examples above show that the preposition *mina* "of" cannot intervene between the quantifier and its argument in contrast to the definite scenario. Thus, the assumption here is that this quantifier is restricted by a bare noun or number since that distributivity requires this form only. This blocks the possibility of a null PartP relation between *kul:*$_{every/each}$ and its DR as is the case for the former group that can combine with overt or covert partitives. The type of restriction can be summarized as follows:

**Table 5. QCS Quantifiers and DR**

| **Quantifier** | **DR noun** |
|---|---|
| kul: "every/ each" | Bare singular noun/ number |
| dʒami:ʕ "all"<br>kul:-u "all"<br>muʕðam "most"<br>baʔdˤ "some" | PartP +Plural definite noun |

### 4.4.3 Partitive Quantifiers

This group of quantifiers behaves similarly in that they are restricted by a(n) (c)overt PartP only. They have distinctive syntactic and semantic aspects which distinguish them from their distributive universal *kul:* :

## I. Inheritance of Post-PartP Features

They inherit the definiteness of the DP within PartP as indicated in (34)

## II. Collective vs. Distributive Interpretations

Similar to definite plural nouns, the partitive quantifiers' distributive and collective interpretations are determined by other external factors like lexical denotations of verbs as well as semantic operators (Dist) (Link, 1983) as follows:

(37) qaraʔa baʕd-u al-awla:d-i kita:b-an (collective OK & distributive OK)
read$_{-past}$ some-$_{Nom}$ the-boys-$_{Gen}$ $_{Indf}$-book-$_{Acc}$
" some of the boys read a book."

The verb *qaraʔa "read"* is ambiguous. It can be interpreted collectively or distributively. The collective interpretation allows the verb to apply to the individuals as a group: some (of the) boys read a book together. The distributive interpretation requires the predicate to apply to each member of the group individually. Put differently, each member of the group read some book individually, maybe a different book for each boy. In this case, the partitive quantifier takes scope over the distributive operator:

(37)' a. **Distributive Reading:**
$\exists x[x \leq [\![\text{the boys}]\!] \wedge \forall z\ [z \leq x \wedge \text{atomic}(z) \longrightarrow \exists y[\text{book}(y) \wedge \text{read}(z,y)]]]$

b. **Collective Reading:**
$\exists y[\text{book}(y) \wedge \exists x[\ x \leq [\![\text{the boys}]\!] \wedge \text{read}(x,y)]]$

The above logical forms capture the collective and the distributive readings of the plural existential partitive. What can be seen in the above logical forms is that the distributivity is contributed by an external operator, namely the distributive operator that distributes the members of the quantified set over the predicate VP.

## III. Partitive DP and Q are Separable (float) with Resumption

Another aspect for this group of quantifiers is that they can float, and the PartP complement DP can appear in different locations within a clause. In this case, the stranded quantifier is restricted by a resumptive pronoun in the DP base position within the CQS as follows:

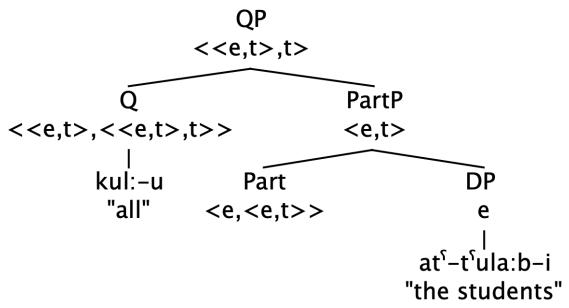
(38) al-awla:d-u (kul:-hum) qaraʔa-u (kul:-hum) kita:b-an (kul:-hum)
the-boys-Nom all-them read-past all-them Indf-book-Acc all-them
"the boys all read some book"

In (38), the quantifier *kul:$_{all}$* and its DR (the complement of PartP) can appear in different locations in the clause. The definite noun's base position is filled with the resumptive pronoun *-hum* "them" which is co-indexed with *al-awla:d-u* " the boys". As shown, the quantifier positions are represented by parentheses to show the possible locations. To sum up, the same concept of floating applies to the other partitive quantifiers with more restrictions in the position where a quantifier appears. The main goal is to show that these quantifiers allow PartP's complement DP to be dissociated from its base position to surface outside the QP domain.

Overall, the QCS of this group of quantifiers can be represented by following LF:

(39) a. dʒa:ʔa **kul:-u** **atˤ-tˤula:b-i**
came **all-Nom** **the-students-Gen**
"all of the students"

b.




c. ⟦all the students⟧= λQ.∀x[x≤ιy.*student (y)⟶Q(x)]

### 4.4.3.1 Notes on *baʔdˤ* "some" Denotations

*baʔdˤ* "some" shows some ambiguity in that it can be interpreted as partitive "some of" or as cardinal "sm". Both interpretations are possible without a syntactic or intonational change as in English. According to Diesing (1992), English *some* can be interpreted as either cardinal or partitive. The distinction between these readings is attributed to an intonational stress for the latter one:

(40) a. SOME students came and the others did not. (partitive)
b. Sm students came (? and the others did not ). (cardinal)

For Arabic, these two readings can be distinguished by the interpretation of the definite noun in the partitive structure after *baʔdˤ* "some". More explicitly, definite nouns in Arabic, in addition to picking salient or familiar individuals in a context, can denote kinds. Therefore, the different readings of *baʔdˤ* "some" are caused by how the embedded DP is interpreted:

(41) iʃtara: kul:-u radʒul-in baʕdˤ-a al-saja:ra:t-i
bought every-Nom man-Gen some-Acc the-cars-Gen
"every man bought some cars/ some of the cars"

In (41), *baʕdˤ-a al-saja:ra:t-i* can be interpreted as *"some of the cars" or "sm cars"* depending on the denotations of the definite noun *al-saja:rat-i* "the cars". When it picks a contextual salient group of cars, the partitive interpretation is available. Otherwise, it denotes a kind reference which renders the cardinal reading. The same applies to the other partitive quantifiers:

(42) uħibu: muʕðˤam-a al-muʔal:m-i:n
like-I most-Acc teachers-Gen
"I like most (of the) teachers."

In contrast to *baʔdˤ* "some", the kind reading of the other partitive quantifiers requires a generic context. Otherwise, their kind reading is infelicitous (Ouwayda, 2014). However, *baʔdˤ* "some" DR DP can have either reading in any context (episodic and generic):

(43) a. kul:-u al-bana:t-i juħbibina al-duma:
all-Nom girls-Gen like the-dolls
"all (of the) girls like dolls." (kind or contextually salient girls)

b. kul:-u al-bana:t-i ʔakalna tufaħat-an
all-Nom girls-Gen ate Indf-apple-Acc
"all *(of the) girls ate an apple." (contextually salient girls)

c. baʕdˁ-u al-bana:t-i ʔakalna tufaħat-an
some-Nom girls-Gen ate Indf-apple-Acc
"some (of the) girls ate an apple." (cardinal or partitive)

To illustrate, these examples show that quantification over partitives is mostly determined by the denotation of the downstairs definiteness interpretation. In (43), *kul:"all"* quantification can be over a contextually salient set of girls or all the girls in the world depending on the context, which guides us to how to interpret the definiteness of the noun. But existential the quantification is always ambiguous in all contexts to contribute either reading.[46]

Overall, the indicated aspects in the previous presentation distinguish the partitive quantifiers form the distributive quantifier *kul:* that will be discussed next. We will look at the different interpretations of *kul:* "each/every" vs. "all" and what contributes each interpretation.

### 4.4.4 *Kul*: Collectivity vs. Distributivity

Distributivity entailments can be contributed by several factors such as QPs, predicates (VP), adverbs, and events. The analyses of Link (1983), Schwarzschild (1996), Brisson (1998), Dowty, (1987), and Champollion (2017) looked at distributivity based on predicates by positing several categories of verbal predicates and covert operators that contribute the distributivity, with minimal attention to the strong distributive quantifiers *every* and *each.* Beghelli & Stowell (1997) and Szabolcsi (1997, 2010) considered the distributivity of these quantifiers by looking at this issue from a scope taking perspective and featural interpretation [+/- dist]. They argue that a key distributive quantifier has a [+ dist] feature which affects its semantic contribution. To quantify distributively, the clause consists of cartographic syntactic layers to which a nominal (Q-NP or

[46] The same hypothesis extends to bare partitives in Italian, where *PartP+definite noun* can be used to express indefiniteness in argument position, as indicated by Zamparelli (2002) Storto (2003b):

a. Ho incontrato **degli studenti**
Have.1.sg met **of-the students**
" I met some students" Zamparelli (2002:308)

The indefinite interpretation of *degli studenti* "of-the students" is attributed to kind reference of the PartP complement.

DP) should move overtly or covertly at LF to check features. Among the posited levels, in these proposals, are DistP and ShareP. The key distributive quantifier has the indicated [+dist] feature that requires it to move, via QR at LF or an overt movement in the narrow syntax, to Spec DistP to check this feature. On the other hand, indefinites with(out) cardinals and other variables that vary with the distributive quantifier move to Spec ShareP, which is located lower than DistP.

Therefore, the distributivity entailments can be achieved by interactions of several factors associated with QPs (or DPs) and other elements within a clause structure. Here we will look at the distributivity and collectivity entailments of the Arabic quantifier *kul*: "each & every" vs. "all". The claim that I am pursuing here is that the distributive and the collective interpretations of this universal quantifier are determined by the type of DR. *kul:* can be distributively strong "every/each" or weak "all" depending on its DR, (c)overt PartP vs. a bare noun with(out) a cardinal[47]. To show the distinction between the interpretations of *kul:*, consider the following examples:

(44) a. kul:-u **bint-in** rasamat radʒul-an (Bare Noun DR)
every-Nom **Indf-girl-Gen** drew Indf-man-ACC
"every girl drew a man."

b. kul:-u **al-bana:t-i** rasam-na radʒul-an (Covert PartP)
all-Nom **the-girls-Gen** drew Indf-man-ACC
"all of the girls drew a man."

As shown, *kul:* is distributive when its DR is a bare singular noun as in (a). In contrast, its collective interpretation requires its DR to be PartP as in (b). Despite the morphological uniformity of the

[47] Beghelli & Stowell (1997) categorize *every & each* as strong distributive quantifiers and *all* as the weak counterpart because of the following characteristics:
**Strong distributive quantifiers *every& each*:**
a. The distributivity is obligatory.
b. It can arise under inverse scope construal
**Weak (pseudo) distributive quantifier *all*:**
a. Its distributivity is optional.
b. Its distributivity cannot arise under inverse scope construal.

Arabic universal quantifier *kul:*, still, the DR syntactic category resembles English, as shown in the translations, in that *every* is restricted by a bare singular noun while *all* is restricted by PartP.

In the following sub-sections, we will look at two assumptions of what shifts the interpretations of *kul:* (collective vs. distributive). Is it the (in)definiteness value of this quantifier and its DR that contributes the interpretation? Or is it the syntactic category (NP vs. PartP) of DR?

#### 4.4.4.1 Distributivity of *kul*: Based on (In)definiteness

English and other languages distinguish their universals with respect to distributivity via the use of different lexemes, yet Arabic unifies all the readings under one lexeme. Regarding this issue, Fehri (2018, 2020) attributes the distributivity distinction on universals to their (in)definites value:

> I claimed earlier that the feature [±definite] is what grammatically characterizes the distributive/non-distributive (or collective) divide in Arabic. Other authors, including Gil (1995) for Hebrew, Beghelli & Stowell (1997) for English, or Hallman (2016) for Arabic, have claimed that it is Number, or more precisely the [±singular] feature. Fassi Fehri (2018, Chapter 4) has argued for the definite specification as the most appropriate, as has been illustrated above." (Fehri, 2020:6)

According to his dichotomy, *kul:*$_{every/each}$ is indefinite while *kul:*$_{all}$ is definite. The proposal is not so explicit with respect to whether the definiteness value of the quantifiers is intrinsic or a feature that is inherited from their DR as well as what the contribution of the (in)definiteness distinction on other quantifiers might be. However, drawing this syntactic distinction between the types of *kul:* interpretations seems attractive and plausible, but how can we account for the following based on the suggested criterion?

### I. Altering Definiteness Value

Other quantifiers can alter their definiteness value without affecting their semantic interpretations. For instance, *muʕðˁam* "most" *baʕdˁ* "some" can be bare, which implicates that they are morphologically indefinite. However, that does not require them to be distributive as follows:

(45) a. ʔakala baʕdˤ-un / al-baʕdˤ-u min atˤ-tˤul:a:b-i tufa:ħat-an
ate Indf-some-Nom the-some-Nom of the-students-Gen Indf-apple-ACC
"some of the girls ate an apple."

b. ʔakala muʕðˤam-un / al-muʕðˤam-u min atˤ-tˤul:a:b-i tufa:ħat-an
ate Indf-most-Nom the-most-Nom of the-students-Gen Indf-apple-ACC
"most of the girls ate an apple."

In (45)(a&b), the quantifiers *baʕdˤ " some"* and *muʕðˤam* " most" head a free state partitive form which allows the quantifiers to have either definiteness value. We can see that the (in)definiteness value distinctions on these quantifiers does not impact the semantic interpretation. In either case of (in)definiteness marking, the distributive and the collective interpretations of the sentence are present semantically because the distributivity is contributed by the covert distributive operator that applies to the predicate VP and causes the variation of the indefinite object in its scope, as shown previously in (37)'. If we follow Fehri's proposal that (in)definiteness is the main factor for distributivity of the universal quantifier *kul:* and it is the morphological parameter that marks distributivity, we should see it present here to distinguish the readings of other quantifiers. What has been witnessed here is that altering the definiteness value of other quantifiers does not impact the distributive and collective interpretations. Further, tying definiteness distinctions to distributivity will divert its original semantic contribution (uniqueness/familiarity vs. existentiality/novelty) to exceptional denotations to distinguish an aspect of one quantifier.

## II. Quantifiers are not Specified for (In)definiteness Intrinsically

Another drawback for this hypothesis is that it contradicts the nature of Arabic quantifiers. Arabic quantifiers behave like modifiers in that their definiteness is acquired from their domain restriction syntactically, especially in CS. Accordingly, this hypothesis supports the suggestion that nominals are the essential elements within a DP which are specified for this feature, as has been established in chapter (2). Consequently, the nouns spread their (in)definite features to other

elements that acquire them syntactically. Regarding the discussed partitive quantifiers, including the collective *kul:*$_{all}$, they can combine directly with a null PartP and they inherit their definiteness value from the partitive complement DP, as in (34). On the other hand, the distributive *kul:*$_{\text{every/each}}$ counterpart rejects this combination by requiring a (c)overt singular bare noun or a number as DR, in CS only, which agrees with it for indefiniteness. The co-occurrence of a null PartP and the distributive *kul:* within a QCS is illicit since this type of quantifier requires a special DR as shown in example (36). To sum up, it can be argued that Arabic quantifiers' definiteness value is determined by their domains, in QCS, as a type of agreement, but this feature agreement on the quantifiers is not the main cause of whether a quantifier is distributive or collective since it is only grammatical definiteness.

#### 4.4.4.2 Distributivity of *kul*: Based on DR Category

Alternatively, the distinction between the collective and distributive readings of *kul:* rests on the type of their DR restriction rather than assuming that *kul:*'s intrinsic (in)definitenss specification contributes its distributivity. More clearly, the distinction can be attributed to the category of the DR restriction: PartP or NP, which is categorized as an indefinite noun morphologically. The (in)definiteness inherited by the universal quantifier can be considered a syntactic clue for the type of DR which contributes either case. The contribution of the indefinite noun in the DR position of the universal quantifier *kul:* supports distributivity by providing granularity of DR individuals (cf. Schwarzschild, 1996; Beghelli & Stowell, 1997; Champollion, 2017). More clearly, if the distributive universal quantifier DR is a singular noun, we expect the scope predicate to vary with every atomic individual. Put differently, in this context, the VP predicate is a property of every atomic individual which is established by DR rather than being true of an individual sum collectively.

In contrast, when *kul:* combines with PartP without any intervening factor that regulates

the DR individuals as in the former case, the collective interpretation "all" is more salient. In this context, the distributivity over the DR individuals is contributed by external factors, like the distributive operator, as illustrated in (37)'. This type of quantification has led Link (1983), Dowty (1987), and Brisson (1998) to posit that *all* induces the totality or the maximality effect of its definite DR despite the differences between their analyses. What is meant is that *all* ensures that the VP predicate applies to the maximal sum with no exception. But distributivity is not critical for this concept because it is not inherent with this type of quantification. For this kind of quantification, there is no sign for how to partition the individual sum into atoms or larger sums (groups).

To support the posited distinction, we can shift the collective interpretation of *kul:* to its distributive interpretation by placing an indefinite noun or a number between the quantifier and PartP DR. In this context, the distributivity of the universal quantification becomes strong because there is an element that contributes the needed granularity of the DR members for the distributive interpretation. Accordingly, *kul:* distributes the members of DR exhaustively over the VP scope and events. The following examples support the suggested claim:

(46) a. ħamala (al-)kul:-u (min) ha:ʔula:ʔi alawla:d-i ta:wilatan
lifted (the-)all-Nom (of) these the-boys-Gen Indf-table-Acc
"all of these boys lifted a table."

b. ħamala kul:-u walad-in / waħid-in (mina ha:ʔula:ʔi alawla:d-i)
lifted every-Nom boy-Gen / one-Gen (of these the boys)
ta:wilatan
Indf-table-Acc
"every boy/ everyone of these boys lifted a table."

c. ħamala kul:-un ~~walad-in~~ / ~~waħid-in~~ (mina ha:ʔula:ʔi alawla:d-i)
lifted every-Nom ~~boy-Gen~~ ~~one-Gen~~ (of these the-boys)
ta:wilatan
Indf-table-Acc
"each of these boys lifted a table."

d. ħamala kul:-u *(θala:θati awla:d-in) (mina ha:ʔula:ʔi alawla:d-i)
lifted every-Nom three-Gen boys-Gen (of these the-boys)
ta:wilatan
Indf-table-Acc
Intended" every group of three from these boys lifted a table."

In the above examples, *kul:* is restricted either by PartP alone or noun/Num+optional (PartP)[48]. Let us ignore the VP predicate distributivity for now. The collective interpretation of *kul:*, in (a), is caused by restricting it by (c)overt PartP, so the predicate applies to a collection of boys who lifted a table together. For the distributive interpretation in examples (b-d), there is a requirement for singular or plural nouns that contributes the distributivity. Also, the same examples show the possibility of eliding the singular noun or the number *waħid* "one" since the atomic distributivity is the default pattern. In contrast, the non-atomic distributivity in (d) does not allow the absence of the nominal or its number. From these examples, it can be argued that the type of the DR is a critical element that determines how *kul:* can quantify distributively or collectively.

The above represents the syntactic patterns for explaining the issue of the collective and distributive interpretation of *kul:*. In the following, I will go deeper in discussing the semantics of distributive *kul:* and how its DR contributes the (non)-atomic distributivity entailments. The goal

[48] The indefinite noun in the DR of the universal quantifier denotes a property of type <e,t>. I propose the noun in this location is an NP. This can be justified by the nature of Arabic, which does not distinguish indefinite DPs from their bare NP morphologically.

of the upcoming presentation is to show how the universal distributive quantification differs from its collective counterpart that has been approached previously.

## A. Atomic Distributivity

Building on the posited syntactic claim, the DR of *kul:* contributes atomic distributivity when it is a singular noun. In this context, this nominal denotes a restricted set whose members are atoms, as in (46)(b&c). This set is exhausted by the universal quantifier in the sense that the VP predicate applies to every atomic member distributively:

(46)' (b&c) ⟦kul:-u⟧ (⟦walad-in mina ha:ʔula:ʔi alawla:d-i⟧)=⟦∀⟧ (⟦boy of these boys⟧)
⟦of these boys ⟧={ a, b, c, d, a+b, a+c, b+c, d+b, a+d, c+d, a+b+c, a+b+d, a+c+d, b+c+d, a+b+c+d}
⟦boy⟧= {a,b,c,d,e,f,g} (apply PM to restrict the set of boys)
⟦boy⟧ & ⟦of these boys⟧= {a,b,c,d} (restricted set)
⟦∀⟧ (⟦boy of (these boys)⟧)= λQ.∀x[x≤ιz*boy(z) ∧atomic (x) ⟶ Q(x) ]

The above logical form shows how the scope VP (the set Q) applies to every atomic member which is contributed by the atomicity of the singular noun *walad* "boy". The same logical form can be posited for the case where the partitive is preceded by the numeral *waħid* (one). Equivalently, this can be considered an articulation of the covert distributive operator that is suggested by Link (1983) for distributing the definite plural noun over VP predicates as in (37)'.Overall, this type of distributivity seems straightforward semantically because of the singularity of the DR noun.

## B. Non-atomic Distributivity

On the other hand, the universal quantifier *kul:* "every/each" differs from its English distributive counterparts in that it can be restricted by plural nouns with numerals directly without a need for lexical items that sort the members of the plurals into groups. More clearly, in most cases, *every* and *each* cannot distribute non-atomic members of a plural DR noun over a VP predicate without using sorting words such as *pair or group* in contrast to *kul:* as follows:

(47) a. every/each *(group) of three boys drew a picture.

b. kul:-u θala:θat-i awla:d-in rasam-u: lau:ħatan
every-Nom three boys-Gen drew Indf-picture-ACC
"every group of three boys drew a picture"

In (a), the English distributive quantifiers do not tolerate the absence of *group* when DR is plural, while the Arabic counterpart does not require the presence of this word's counterpart. Further, using this word in Arabic is superfluous since the distributivity can be achieved without a need for grouping because it is understood contextually.

Regarding English, the atomicity of *every* and *each* is critical to achieving their distributivity; therefore, the use of a group noun is required in this context. Semantically, group nouns like *committee, band,* and *team* denote sets whose members are impure atoms. These atoms are formed by pure sums of non-group nouns (Link, 1984; Landman, 1989). For instance, *committee* denotes a set whose members are impure atoms (committee 1, committee 2…etc.) and each of these impure atoms is formed by a sum of people (committee 1{John+Mark}, committee 2: {Mark+Ben+Chris}...)[49]. In our case above, we can see that English distributive universals require their DR noun to denote a set whose members are (im)pure atoms. Therefore, the contribution of *group* is to render the required atomicity for the distributive universal quantifiers as well as to partition the DR. The following is a simplified explanation for the contribution of grouping to the DR, for (47)(a) above:

[49] A detailed analysis of group semantics is beyond the scope of this enterprise. What is relevant for us here is the concept of impure atomicity, which is required for distributivity despite other details. For further details, see Link (1984), Landman (1989), and Barker (1992).

(47) a' every/each *(group) of three boys drew a picture.

⟦three boys⟧= {a+b+c, a+b+d, a+c+d, b+c+d,}

⟦group⟧= ⟦↑⟧: a function from pure sums to impure atoms (groups) (Link, 1984)

⟦group of three boys⟧= ⟦↑(three boys)⟧= {{a+b+c}, {a+b+d}, {a+c+d}, {b+c+d}}

⟦every⟧(⟦group of three boys⟧)= λQ. ∀x[x ∈ ⟦group of three boys⟧⟶ Q(x)]

The above representation shows how the domain of the universal quantifier denotes a set of impure atoms due to the contribution of groups. The curly brackets reflect the transformation of the individual sums into impure atoms, namely group A, group B, group C. This division allows the universal quantifier to distribute the groups over its scope. Put differently, the scope denotes a predicate that is true of every group of three students. For English, things seem straightforward due to the contribution of the lexical item *group*. This implies that this language has a preference to contribute distributivity semantically by enriching the domain restriction via components that preserve atomic distributivity as in the case of singulars.

Back to Arabic, the issue seems different with respect to distributivity. If we reconsider our example (47)(b), we can notice that this language does not require the presence of a lexical item that groups the members of the DR to achieve the investigated distributivity. To approach the semantics of this type of quantification, I posit that this language relies on a pragmatic factor that accomplishes the non-atomic distributivity. For this case, the DR of the Arabic distributive universal quantifier is achieved by a contextual set variable (Cover) that partitions or groups the DR members as proposed by Schwarzschild (1996: chapter 5) for non-atomic distributivity of definite plural noun subjects. To understand the contribution of this distributivity, consider the following example:

**Context:** John, Bill, and Tom wrote some novels. None of these novels has been written by one author or by the three authors as a joint work. However, Bill happens to be a friend of John and Tom, and he is always a co-author of their literary works. Accordingly, someone may say the following to their fans:

(48) The men wrote some great novels.

According to this example, the sentence is true only when the predicate *wrote some great novels* applies distributively to the non-atomic individuals Tom+Bill and John+Bill. More explicitly, this predicate is not a property of each atomic individual since none of them worked alone, or a property of their individual sum John+Bill+Tom because none of the novels is written by these three together. However, there is a contextual cover that partitions the maximality of the definite plural into binary sub-sums of which the predicate holds. Accordingly, Schwarzschild (1996) enriched Link's (1983) distributive operator via the notion of a cover:

(48)' a. ⟦Non-atomic Dist⟧= λx.λQ.∀y[ Cov(y)∧ y≤ x⟶ Q(y)]

b. ⟦Cov⟧= {t+b, j+b} (Individual Partitioning)

c. ∀y[ Cov.(y)∧ y≤ ⟦the men⟧⟶ ⟦wrote some great novels⟧ (y)]

The cover implementation captures the distributivity entailments of our example by allowing the predicate to be true of the individual partitions. Generally, a cover denotes sub-sets of the predicate that it covers. More clearly, it provide access to context (assignment function) to partition and modify the constituents of the set that it covers.

I adopt the notion of contextual covers in accounting for partitioning the plural DR of *kul:"each/every"*. To achieve non-atomic distributivity, the DR members have to be divided into groups[50] based on this contextual parameter to provide the needed granularity for the universal quantifier. With this contribution, the predicate scope applies to every sum that is contributed by the cover. Consider the following:

[50] I prefer to stay simple in that the cover members are individual sums rather than impure atoms.

**Context**: there are four boys in a classroom. Their art teacher asked them to draw two pictures. The rule of this task requires a collaboration of three students in drawing each picture. When they finish, they should sign their names on the pictures. In the next day, another teacher visited the class. He looked at the pictures and said:

(49) a. kul:-u θala:θat-i awla:d-in rasam-u: lau:ħatan
every-Nom three Indf-boys-Gen drew Indf-picture-ACC
"every group of three boys drew a picture"

b. **Two pictures ⇒ two groups:** Picture 1= a+b+c and Picture 2= a+b+d
⟦Cov⟧={a+b+c, a+b+d} ⟦three boys⟧= {a+b+c, a+b+d, a+c+d, b+c+d}
∀x[Cov(x) ∧ *boy(x)∧ |x|=3 ⟶ ⟦ drew a picture⟧(x)]

The cover contribution in the above logical form provides the contextual grouping of boys. Accordingly, it partitions the member of the set that it covers into two groups {a+b+c, a+b+d} of which the predicate is true and it eliminates any student grouping that is not part of the context, namely {a+c+d, b+c+d}. If the contextual cover is not part of the shown interpretation, we would expect the scope predicate to be a property of any grouping of three boys like the excluded ones. To show this, the following example is a modification of the former with an addition of an overt partitive. It restricts the DR noun set to the salient individuals. However, there is a problem; the verb is going to be a property of all the possible groupings:

(50) a. kul:-u θala:θat-i awla:d-in min ha:ʕula:ʕi al-awla:d-i…
every-Nom three-Gen **Indf-boys-Gen** of these the-boys-Gen
"every group of three boys of these boys…"

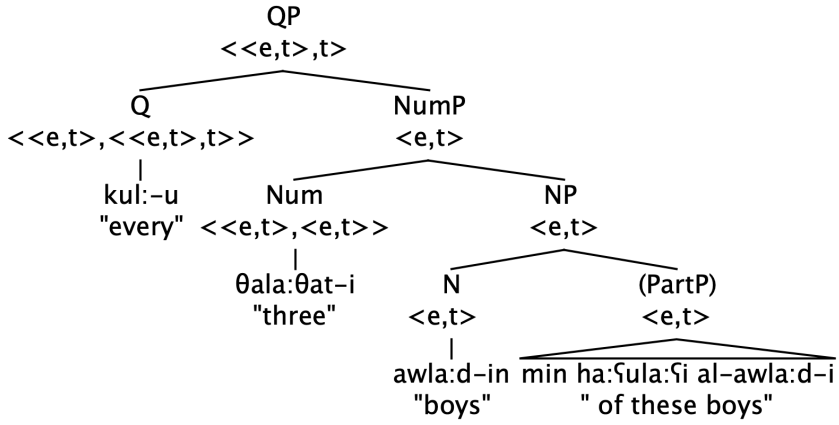
b. ⟦ these boys⟧= a+b+c+d
⟦three boys of these boys⟧= {a+b+c, a+b+d, **a+c+d, b+c+d**}≤ a+b+c+d
⟦every group of these boys⟧ = λQ.∀x[x ≤⟦these boys⟧∧|x|=3 ⟶ Q(x)]

The above logical form does not capture the reading that we are looking for since it lacks the contextual cover contribution. Yes, the universal quantifier DR is restricted contextually by the PartP denotation, but, still we need to rule out the individual sums which are not part of the context.

Regarding this interpretation, the universal quantifier in this context will exhaust all the four individual sums to distribute them over the predicate and events. Therefore, there will be four events of drawing and possibly four pictures. Nevertheless, this is not entailed by the suggested reading. To sum up the distributivity of the universal quantifier, Arabic is similar to English with respect to atomic distributivity. Still, it differs with respect to non-atomic distributivity since this language relies on a pragmatic factor that partitions the DR members.

Before we end the discussion, it is convenient to represent the LF structure of the distributive *kul:.* QP, in the former two examples, can be represented by the following configuration:

(51)




The above structure differs from the one that has been suggested for the collective *kul:* and other partitive quantifiers in that there are projections between the quantifier and PartP. More clearly, these projections provide the granularity needed to achieve distributivity, in contrast to the collective counterpart that combines directly with PartP as shown in (39).

## 4.5 Chapter Conclusion

To sum up, the chapter approaches QCS in MSA by looking at the different interpretations of quantification caused by this complex form's internal constituents. The findings of this chapter propose that quantifiers that head this nominal form are strong presuppositional quantifiers. Most of these quantifiers are partitives whose PartP preposition can be overt in a free state form or covert

in CS. Also, we looked at the issue of definiteness's impact on a quantifier and its DR. For this issue, it has been stated that definiteness marking on the DR noun restricts the domain to contextually salient individuals while this value has no semantic impact on the quantifier itself. Another issue approached here is the distributive entailments of the universal quantifier *kul:*. The proposed solution for this issue attributes the distributivity to the syntactic category that restricts this quantifier: PartP vs. NumP+NP. To conclude, this chapter's findings prepare us to tackle the issue of scope taking, which is the topic of the next chapter. In that chapter, we will look at different forms of DPs, simple vs. complex CS, and their interactions with quantification and scope taking in clauses (inverse scope vs. inverse linking).

# CHAPTER (5) Notes on Scope Taking

## 5.1 Introduction

After approaching the internal aspects of some complex and quantified nominals in MSA, the analysis will zoom out to approach scope taking at clause-level. More explicitly, this chapter is devoted to investigating the scope of MSA quantified nouns (Q-NP[51]). There are two reasons behind including this issue within the scope of this enterprise. First of all, to have a complete view of quantification within a language, its quantifiers have to be approached internally, as discussed previously, in addition to their external interactions at clause-level. Put differently, in the previous chapter, we have looked at different types of QCS, and how they differ syntactically and semantically. Now, we need to see how Q-NPs behave scopally at clause-level. Another reason for looking at this phenomenon is that scope taking cross-linguistically has shown some variations (Beghelli & Stowell, 1997; Szabolcsi, 1997b; Ionin, 2001; Bobaljik & Wurmbrand, 2012; Kiss & Pafel, 2017) from what has been stated about English covert scope ambiguity that takes place at LF (May, 1977, 1985; H&K, 1998; and others). Some languages employ syntactic movements to manifest scope overtly at the syntactic level which feeds LF. Therefore, the aim is to consider the properties of MSA Q-NPs' scope taking, especially as this language's semantic aspects have been studied poorly. Overall, this chapter does not aim to provide a complete overview of scope taking in MSA, since it requires a greater enterprise to capture all the aspects of this phenomenon. Instead, the upcoming investigation targets some distinctive scope taking aspects of this language.

[51] To avoid confusion, any noun that shows scope interactions will be dubbed Q-NP, including indefinite DPs.

Before investigating the targeted issue, there is a need to define the notion of scope taking and what causes this phenomenon. Generally, most quantified sentences encounter semantic ambiguity depending on where a Q-NP is interpreted with respect to other similar counterparts and semantic operators that a sentence may have. More clearly, a sentence can have different interpretations depending on whether a quantified noun is interpreted within or out of the domain of another scope taker at LF. The various interpretation locations render different LFs (with truth conditions) which cause the semantic ambiguity of quantificational sentences. The following exemplifies the indicated ambiguity[52]:

(1) **A girl** admires **every man.**

**i. Surface Scope:** there is a girl such that she admires every man.

**LF:** ∃x[girl (x) ∧ ∀y[man(y) → admires (x, y)]]

**ii. Inverse Scope:** for every man, there is a girl such that she admires him.

**LF:** ∀y[man(y) → ∃x[girl (x) ∧ admires (x, y)]]

Sentence (1) is ambiguous depending on where its Q-NPs are interpreted at LF, as shown in (i&ii), despite the sentence's PF uniformity. In (i), the interpretation reflects the surface scope of Q-NPs where the existential Q-NP takes scope over the universally quantified noun. For this reading, the subject *a girl* does not co-vary with *every man*. Regarding reading (ii), it represents the covert inverse scope reading that requires the reverse order of the quantifiers where girls vary with men, in that each man is being admired by one (possibly different) girl. As shown, different orders of the Q-NPs affect the semantic interpretation of the sentence. Another related phenomenon is known as inverse linking (May, 1977, 1985; H&K, 1998), where a Q-NP embedded within a complex DP (Q-NP) can interact with the latter for scope taking, as follows:

[52] NOTE: I have stated previously, in chapter (2), that indefinites are not quantificational because of their exceptional aspects following Heim (1982) and Reinhart (1997). For explanatory reasons, I will adopt the existential quantification theory for the upcoming LF presentations to avoid switching back and forth between theories. Here, the discussion is not directed toward indefinites and their exceptional wide scope. Rather, it is going to be considered as a type of Q-NPs to diagnose scope taking in MSA.

(2) **A man** from **every city** participated.

**i. Surface Scope (**odd pragmatically**)**: there is a man who happened to be from every city who participated.

$\exists x[man\ (x) \wedge \forall y\ [city\ (y) \longrightarrow from(x,y)] \wedge participated(x)]$

**ii. Inverse Linking:** From every city, there is a man who participated.

$\forall y\ [city\ (y) \longrightarrow \exists x[man\ (x) \wedge from\ (x,y) \wedge participated\ (x)]]$

Example (2) shows the same scope taking ambiguity. However, the difference here is that the universal Q-NP *every city* is embedded within a complex indefinite noun and is not an argument of the main verb, as in (1). Despite the shown two readings, the above sentence has only one pragmatically felicitous interpretation, namely the inverse linking reading in (ii). According to this reading, the universal quantifier takes scope over its containing indefinite, but the surface scope is pragmatically odd. Similarly, the same inversing effect is present in genitives where the complement takes scope over its containing definite DP (iota: ι) as follows:

(3) **Every man's wife** participated. $(\forall > \iota)\ (\iota > \forall??)$

The genitive structure in (3) differs from the complex DP with PP in (2) in that the head of the genitive structure *wife* is semantically definite. The definiteness of the head is attributed to the possessive annexation to the presuppositional Q-NP *every man*. Semantically speaking, universal quantifiers and definite descriptions share the aspect that they are presuppositional (Milsark, 1976). Therefore, the semantic definiteness inheritance of the genitive DP from its complement is expected. In contrast to genitives, PPs' relations with a presuppositional nominal argument within a complex DP do not allow definitenss inheritance, as indicated in chapter (3). Back to our example,

the felicitous reading requires the quantifier *every man* to take wide scope over its containing genitive to convey the reading as *For every man x, the unique wife of x participated*[53]. The infelicitous counterpart requires the universally quantified NP to be interpreted within the genitive structure as *The unique wife of all the men participated.*

Overall, the inverse scope and the inverse linking readings are the targeted points that will be investigated in this chapter[54]. As will be shown later, languages differ from English with respect to how to convey these readings, mainly the inverse scope reading. Instead of re-ordering Q-NPs at LF, they establish the indicated orders at the syntactic level via movement due to their word order freedom. Such movement feeds both the LF and PF interfaces, and mostly these languages' quantificational sentences do not show scope ambiguity, in contrast to English. Regarding these scope distinctions, the questions that the upcoming investigation attempts to answer are the following:

- Is MSA a scope fluid language at LF, like English, in that different readings are caused by various covert re-orderings of Q-NPs at LF? Or is it a scope rigid/frozen language?
- If this language belongs to either category or both, does this apply similarly to inverse linking readings?
- Is the scope rigidity or fluidity related to a specific syntactic configuration such as word order, CS, or topicalization…? Or is it an aspect that applies to all the syntactic forms invariably?

The presentation will proceed as follows: First of all, I will introduce the mechanism that establishes the re-ordering of quantifiers at LF, namely Quantifier Raising. Next, cross-linguistic

[53] When a distributive universal Q-NP scopes out of its containing definite DP, it causes that DP co-variation because it binds a variable in that DP. The same co-variation can be established when a possessive pronoun is bound by *Dist Q-NP*:
a. Every man$_{(1)}$ loves his$_{(1)}$ mother.
The genitive *his mother* is definite semantically. However, it co-varies because its possessive pronoun is bound by *every man.*

[54] For explanatory reasons, I will delay the presentation of MSA data.

counterexamples of LF scope taking ambiguity will be introduced to pave the way for approaching MSA scope taking. Finally, MSA scope taking at clause and DP (including CSs) levels will be analyzed to understand Q-NPs' scope taking in this language's structures.

### 5.1.1 Quantifier Raising

Scope ambiguity has been approached by different syntactic and semantic theoretical mechanisms[55]. Among these mechanisms is Quantifier Raising (QR) (Chomsky, 1976; May, 1977, 1985 followed by H&K, 1998 and many others). This type of theory attributes scope ambiguity to movement of Q-NPs at LF from their base argument positions to adjoin to the closest XP node with a type t denotation (H&K, 1998) such as TP, vP, PP, NegP…etc. When they adjoin to this position via QR, each Q-NP should dominate a binder co-indexed with its trace. Consequently, the order of the Q-NPs that is established via QR determines their scope domains. The following is an updated H&K manifestation of QR at LF for example (1) above:

i. Move Q-NP and include traces & binders:
   a. [TP [A girl] $_{(2)}$[*v*P [every man] $_{(1)}$[*v*P ($t_2$) [v'… admires ($t_1$) ]]]]
   b. [TP [every man] $_{(2)}$[TP [A girl] $_{(1)}$[*v*P ($t_2$) [v'… admires ($t_1$) ]]]]

ii. Apply predicate abstraction & trace rule[56]:
   a. **Surface Scope** [TP [a girl] λx.[*v*P [every man] λy.[*v*P admires (x,y) ]]]]
   b. **Inverse Scope** [TP [every man] λy.[TP [a girl] λx.[*v*P admires (x,y) ]]]]

The above shows how QR implementations represent either reading at LF via covert movement of the quantifiers to adjoin to TP and *v*P since they are the closest nodes with a denotation of type t.

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[55] Semantic mechanisms for analyzing scope ambiguity are: Quantifying-in (Montague, 1973), Storage (Cooper, 1975), and Type Flexibility (Hendriks, 1993 following Partee and Rooth,1983). These theoretical methods are purely semantic (compositional) in that they do not require modifications to the syntactic structure.

[56] The following are the compositional rules (H&K, 1998):

**Predicate Abstraction**
Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment a, $[\![\alpha_i]\!]^g = \lambda x \in D.\ [\![\gamma]\!]^{g\ x/i}$

**Traces and pronouns rule**
If α is a trace or a pronoun, i is a natural number index, and g is a variable assignment whose domain includes i, then $[\![\alpha_i]\!]^g = g(i)$.

As shown, the surface and the inverse scope readings are established by the different orders of the Q-NPs at LF, where the wide scope Q-NP c-commands the other one, which occurs in its scope domain. Further, QR is not only a movement to achieve inverse scope. Even for surface scope, QR is a required interpretive movement when the sentence has an object Q-NP to avoid semantic type mismatch with the main verb (H&K, 1998). From this presentation, we can see that QR is a required LF process to interpret quantificational sentences.

### 5.1.2 Cross-linguistic Scope Rigidity

It has been highlighted that other languages' quantificational sentences may not support covert scope ambiguity as in English. More clearly, the scope of their quantifiers is constrained by their syntactic order, in that the reading of the sentence is restricted to the surface scope order of their Q-NPs. Semantically, their Q-NPs may undergo the indicated QR to avoid type mismatch only, but there is no covert inverse scope reading achieved by this process at LF. Even though such languages cannot derive inverse scope via covert scope shifts like English, they still have other means for achieving inverse scope, namely overt movement operations that feed both language interfaces: LF and PF. Szabolcsi (1997b:84) proposes that a language of this type "wears LF on its sleeve." For example, Japanese, German (Bobaljik & Wurmbrand, 2012), and Russian (Ionin, 2001) can derive the inverse scope reading via scrambling. To illustrate, consider the following example from Japanese which supports the stated claim:

(4) a. Dareka-ga subete-no hon-o yonda (∃ > ∀) (*∀ > ∃)
someone-Nom all-Gen book-Acc read
"someone read all the books."

Since we are dealing with a bound variable, Predicate Abstraction modifies the assignment function g, so as to map any bound trace to the value of its binder. For instance, the predicate abstraction in the rule's definition modifies g to map i to an individual x which it is the individual variable that is abstracted over.

b. Subete-no hon-o dareka-ga yonda (∀ > ∃) (∃ > ∀ reconstruction)
all-Gen book-Acc someone-Nom read
"someone read all the books."

(Bobaljik & Wurmbrand, 2012:374)

In (4)(a), the sentence has only one reading, the surface scope reading, where the existential subject scopes over the universal quantifier. On the other hand, (b) is the derived inverse scope reading from (a) via overt scrambling. However, the overt scope inversion of this sentence still can show scope ambiguity due to the possibility of reconstruction at LF. Despite this effect, the quantifier scope in (a) cannot be inverted at LF to derive the other reading; therefore, the sentence is unambiguous.

Another type of scope rigidity can be found in Hungarian. This language can be considered partially rigid since covert inverse scope is possible post-verbally while scope is frozen preverbally (Szabolcsi, 1997b). Put differently, this language's speakers make use of the left periphery to disambiguate the scope of quantifiers as follows:

(5) a. Hatnál több ember **hívott fel** mindenkit (more 6 > ∀) (*∀ > more 6)
six-than more man **called up** everyone-Acc
"More than six men phoned everyone."

b. Mindenkit hatnál több ember **hivott feI**. (*more 6 > ∀) (∀ > more 6)
everyone-acc six-than more man **called up**
"more than six men phoned everyone." (Szabolcsi, 1997b:118)

c. Egy keddi napon **harapott** meg hantál több kutya
It Tuesday day-on **bit** pfx six-than more dogs
minden filit. (more 6 > ∀) (∀>more 6)
every boy
"it was on a Tuesday that more than six dogs bit every boy."

(Szabolcsi, 1997b:146)

The cited examples support the generalization of Szabolcsi (1997b) and Kiss & Pafel (2017) which

indicates that overt movement of Q-NPs to the left side of the clause fixes the scope with no reconstruction as in (a&b). Despite the variation among these works regarding the landing site of the moved Q-NPs in the left periphery, topicalization plays a critical role in disambiguating scope in this language since it is a topic-permanent language[57]. On the other hand, when Q-NPs occur post-verbally, the quantificational sentence is ambiguous, as shown in (c), where the universal quantifier and the counting Q-NPs can have different relative scopes at LF.

To sum up, scrambling and movement to the left periphery are syntactic displacements that disambiguate scope overtly. Accordingly, the cited languages can be categorized based on the inverse scope ambiguity at LF into:

**a. Scope Rigid:** scrambling languages, no inverse scope without overt movement (German, Japanese, and Russian)

**b. Partially Scope Rigid**: LF inverse scope permitted post-verbally (Hungarian)

**c. Scope Fluid:** QR can invert scope at LF with no configurational restrictions, unlike the former types (English)

Nevertheless, the above generalizations cannot be extended to all of these languages' quantificational configurations because the indicated rigidity concerns a specific syntactic structure (Bobaljik & Wurmbrand, 2012). The drawn categorization is related to subject and object Q-NPs only, but it cannot extend to other structures that may contain Q-NPs. For instance, all the cited

[57] Hungarian basic word orders are SVO and SOV, but still, the language has other orders: OVS, OSV, VSO, and VOS. Unlike English, it is a topic-comment language where the first preverbal nominal is categorized as a topic, while the rest of the sentence is categorized as a comment that predicates about that topic. According to Kiss (2002:3), one difference between English and Hungarian can be seen in passive sentences, where the latter changes the topic only. On the other hand, English modifies the sentence structure as follows:

a. [$_{Top}$ J´anos] [Pred fel h´ıvta Marit]
John up called Mary-$_{ACC}$
"John called up Mary."

b. [$_{Top}$ Marit] [$_{Pred}$ fel h´ıvta J´anos]
Mary-$_{ACC}$ up called John-$_{NOM}$
"Mary was called up by John." (Kiss, 2002:3)

For Hungarian, the difference between the active and passive forms is associated with changing topics as in (a&b) while the English translations shift the active syntactic configuration to its passive counterpart.

scope rigid languages allow inverse linking where the complement Q-NP of PP within a complex DP (or Q-NP) can take scope over the latter and other Q-NPs within a clause (Bobaljik & Wurmbrand, 2012). On the other hand, English is known to permit scope ambiguity at LF, but this generalization might be confronted by exceptional rigidity where the scope of Q-NPs is restricted to the surface scope, with no inverse scope at LF[58], as follows:

(6) a. John gave a (#different) girl every toy. (∃ > ∀) (*∀ > ∃)

b. John gave every toy to a (different) girl. (∃ > ∀) (∀ > ∃)

Example (a) shows some scope freezing in that the indirect existential object takes scope over the direct one where there is only one girl to whom John gave all the toys. Consequently, *a girl* does not vary with *every toy*, in contrast to (b). In this example, the variation of the indefinite can be supported by the contribution of the adjective *different*, which must be in the scope of a universal on this construal.

To conclude, the cited scope rigid languages have the capacity, via their flexible word order, to establish inverse scope overtly. Therefore, we should expect their quantificational sentences to be mostly unambiguous semantically. Our goal here is to find out which category MSA belongs to. The claim that I am pursuing under the upcoming discussion is that it is partially scope rigid like Hungarian. After arguing for this claim, I will approach inverse linking of CSs and complements of PP as well as its semantic interactions with the drawn generalizations about scope taking at clause-level.

## 5.2 MSA Inverse Scope

To understand scope in MSA, we should be aware that its sentences can be formed into two orders based on the location of the subject: SVO and VSO. There are two implications of

[58] The phenomenon is known as the spray-load alternation see Larson (1990) and Bruening (2001).

having a flexible word order. First of all, languages of this type can disambiguate the scope of their quantificational sentences, as has been stated about Hungarian in the previous sub-section. Another implication about MSA is that the subject in SVO order occurs in the left periphery as a topic or a fronted (contrastive) focus (Moutaouakil, 1989; Ouhalla, 1996; Soltan, 2007; Albuhayri, 2019). Occurring in this zone impacts both sentence information structure and relative scope.

### 5.2.1 VSO

I opt to start with VSO word order since it is the neutral word order from which the SVO order is derived (Soltan, 2007; Albuhayri, 2019). The interpretations of quantificational sentences in this word order are expected to be pure of any factor that interferes with the scope of Q-NPs, in contrast to SVO. Let us consider the following sentence:

(7) sa:ʕadat mumaridˤ-atun kul:-a walad-in (∃>∀) (∀>∃)
helped Indf- nurse-Fem-Nom every-Acc boy-Gen
"a nurse helped every boy."
i. there is some (specific) nurse x such that x helped every boy y.
ii. for every boy y, there is some nurse x such that x helped y.

(8) sa:ʕadat kul:-u mumaridˤ-at-in walad-an (∃>∀) (∀>∃)
helped every-Nom nurse-Fem-Gen Indf-boy-Acc
"every nurse helped a boy."
i. for every nurse x, there is some boy y such that x helped y.
ii. there is some boy y such that every nurse x helped y.

The sentences (8) and (9) are ambiguous, despite the preference for the surface scope reading. The ambiguities of these sentences are caused by the location of the Q-NPs at LF, as shown in each reading. More specifically, the ambiguity can be witnessed by the variation and specificity of the existential in each reading. For both sentences, when the existential takes wide scope, it becomes specific, and there is no variation with the strong distributive quantifier. In contrast, if the former occurs in the domain of the latter, the distributivity of the existential is required and the specificity

is lost. To support this claim, consider the following example with the addition of the adjective *muxtalif* "different" (cf. Beghelli, & Stowell, 1997)

(9) sa:ʕadat mumaridˁ-at-un **(muxtalif-at-un)** kul:-a walad-in (∃ > ∀) (∀ > ∃)
helped Indf- nurse-Fem-Nom (**different-F-Nom**) every-Acc boy-Gen
"a different nurse helped every boy."

The contribution of the adjective *muxtalif* "different" in this context is to support the variation that is caused by inversing the surface scope. For this reading, the object universal Q-NP *kul:-a walad-in* "every boy" takes scope over the indefinite noun *mumaridʕ-at-un* "a nurse". In this type of interpretation, *a nurse* will vary with *every boy* because the adjective confirms the variation of the nurses. However, the surface scope of the Q-NPs still available, but the modification of the adjective with respect to this scope renders the referential reading of the indefinite where there is one nurse that is distinctive or different from her colleagues such that she helped every boy. Overall, The distributivity of the indefinite subject supports the inverse scope reading.

Another set of examples can be shown by the scope interaction of cardinals. When an existential cardinal Q-NP takes wide scope, it becomes specific like other indefinites, and predicates and Q-NPs in its scope mostly vary with each atomic member within its restriction set[59]. Consider the following examples:

(10) a. tasal:qa θala:θat-u awla:d-in kul:-a ʃadʒarat-in (∃$_3$ > ∀) (∀ > ∃$_3$)
climbed three-Nom boys-Gen every-Acc tree-Gen
"three boys climbed every tree."
i. there are three boys such that they each climbed all the trees.
ii. for every tree, there are three boys such that they climbed it.

[59] The variation in this context is caused by the distributive operator that allows the predicate (or the scope) to vary when plurals take wide scope (Link, 1983; Reinhart, 1997). The same sentence can have group or cumulative readings of the cardinals, but these readings are not relevant to our discussion. See Szabolcsi (2010:117) for more information.

b. ħadˁara θala:θat-u tˁula:b-in arbaʕat-a idʒtima:ʕa:t-in
attended three-Nom students-Gen four-Acc meetings-Gen
"three boys attended four meetings." $(\exists_3 > \exists_4)=12_{\text{Meetings}}$, $(\exists_4 > \exists_3)=12_{\text{Students}}$
i. there are three students such that each of them attended four meetings.
ii. there are four meetings such that each of them was attended by three students.

The above examples encounter scope ambiguity. Similar to the previous cases, the existential cardinal can have scope interactions with the universal Q-NP which renders its specificity as shown in (a,i) or its variation, as in (a,ii). What distinguishes the existential cardinal from the singular existential is that its domain can be an input for a distributive operator when it takes wide scope, as represented by (a,i). According to this reading, each member of *three students* climbed all the trees. For the inverse scope reading (a.ii), *three boys* vary with each tree in that every tree is climbed possibly by three different students. The same applies to sentence (b), whose arguments are existential cardinals. The one that takes wide scope makes the predicate and the other cardinal vary with every atomic member in its DR. For the surface scope reading in (b,i), the number of meetings is 12. In contrast, the number of students is 12 when the object takes wide scope (inverse scope) as in (b,ii).

From the discussed examples, we see that VSO order is scope fluid. Therefore, quantified sentences with respect to this order show semantic ambiguity, as is the case for English. This implies that Q-NPs can undergo QR at LF to establish scope ambiguity. However, this is not always the case for SVO order, as will be shown in the following subsection.

### 5.2.2 SVO Topic vs. Focus Scope

A subject Q-NP in SVO order is assumed to occur in the left periphery. Generally, nominals in the left periphery contribute semantic and pragmatic information, in addition to what has been contributed by their lexical interpretations (Reinhart, 1981; Rizzi, 1997; Krifka, 2008; and many

others). More explicitly, topics, focused nominals and wh-words appear in the left side of the clause to modify its interpretations at LF. According to this issue, Soltan (2007) and Albuhayri (2019) argue that a subject of SVO can be categorized as a topic or a focus depending on the context: aboutness (topic) vs. new information or alternatives (focus) (Reinhart, 1981; Rooth, 1992; Krifka, 2008). Moreover, categorizing a subject Q-NP of SVO as a topic or focus impacts scope taking as follows:

(11)

**Context:** What did the boys do in the playground yesterday?

a. [walad-un]**top** tasal:qa kul:-a ʃadʒarat-in (∃ > ∀) (*∀ > ∃)
[Indf-boy-Nom]**top** climbed every-Acc tree-Gen
"a boy climbed every tree."

**Context:** who climbed every tree?

b. [walad-un]**foc** tasal:qa kul:-a ʃadʒarat-in (la: radʒul-un) (∃ > ∀) (∀ > ∃)
[Indf-boy-Nom]**foc** climbed every-Acc tree-Gen (not Indf-man-Nom)
"A BOY climbed every tree. (not a man)"

The sentences (11)(a&b) are lexically identical and have the same word order (SVO). However, they differ with respect to what the subject contributes in either case as well as how it affects scope taking. When the subject *walad-un* "a boy" is interpreted as a topic, as in (11)(a), the sentence is not ambiguous since the topic outscopes any scope taker (no inverse scope)[60]. On the other hand, in (b), the same indefinite subject is a focus in the left periphery. It can show scope ambiguity where every tree can be climbed by one specific boy or by possibly different boys. Despite the preference for surface scope, the second reading remains a possibility that becomes stronger in

[60] MSA constrains starting a sentence with an indefinite noun. For this case, an indefinite can be a topic when it is presuppositional (strong/specific), modified, or a head of a CS (Fehri, 1993). Consequently, this excludes the weak interpretation of a topicalized indefinite. On the other hand, a fronted contrastive focus indefinite can be either, but this is conditioned by the focus stress that distinguishes it from topics (Moutaouakil, 1989: 99).

contrastive focus contexts where the speaker may utter the same sentence to distinguish the type of person who climbed every tree: *la: radʒul-un* "not a man".

### 5.2.2.1 Topics

Topicalized nominals are presuppositional in that definite nouns and strong quantifiers can be topics, in addition to weak Q-NPs and indefinites when they are specific (presuppositional) (Reinhart, 1981). This proposal agrees with Fehri's (1993) statement about Arabic which suggests that subjects in SVO have to be definite or specific indefinite. His statement follows the classical grammarians about topics in Arabic. However, this restriction does apply to focused subjects in SVO order. Regarding the topic scope, we can notice that topicalization freezes the scope of Q-NPs, as shown previously. Accordingly, if the subject of a quantificational SVO sentence is interpreted as a topic, scope ambiguity is not permitted.

To circumvent the preference for subject wide scope, the same wide scope effect applies to object topics. In Arabic, object topics can appear in the left side of the clause via left dislocation (CLLD). The topicalized object in the left periphery has to be co-indexed with a resumptive pronoun in its base argument position as follows:

(12)

**Context:** what happened to the trees?

a. **[kul:-u ʃadʒarat-in]$_{(i)}$ top** tasal:q-**ha:$_{(i)}$** walad-un
**[every Nom tree-Gen] $_{(i)}$top** climbed-**it$_{(i)}$** Indf-boy-Nom
"for every tree, some boy climbed it." (#∃ > ∀)(∀ > ∃)

**Context:** what about yesterday's meetings?

b. **[arbaʕat-u idʒtima:ʕa:t-in]$_{(i)}$top** ħadˤar-**ha: $_{(i)}$** θala:θat-u tˤula:b-in
**[four-Nom meeting-Gen](i)top** attended-**them$_{(i)}$** three-Nom students-Gen
"four meetings are such that three students attended each." ($\exists_4 > \exists_3$) (#$\exists_3 > \exists_4$)

As shown, the topicalized objects cannot have narrow scope with respect to the other Q-NP. Therefore, the interpretations of sentences with topicalized Q-NPs are restricted to the surface scope reading (Topic > all Q-NPs)[61].

#### 5.2.2.2 Focus

A focused noun (or Q-NP) differs from a topic in the left periphery in that it is marked with intonation to mark new information or contrast with existing information. In MSA, the appearance of the focused noun in the left periphery is derived via A'-movement like a wh-word (Ouhalla, 1996; Soltan, 2007; and Albuhayri, 2019). However, this movement does not disambiguate scope like topicalization. As indicated previously, a focused subject Q-NP in SVO can have narrow scope with respect to any scope taker in the clause. The same applies to a focus fronted object Q-NP as in the following:

**Context:** the speaker contrasts a given information about what every girl bought:

(13) **[dumi:at-an]$_{(i)foc}$** iʃtarat kul-u bint-in **t$_{(i)}$** (∃>∀)=one doll
**[$_{Indf}$-doll-$_{Acc}$]$_{(i)foc}$** bought every-$_{Nom}$ girl-$_{Gen}$ **t$_{(i)}$** (∀>∃)= one for each
"every girl bought A DOLL."

In (13), the fronted focus does affect scope. The scope is fluid in either case because the number of dolls can be one or more, depending on where the existential *dumi:at-an* " a doll" is interpreted.

### 5.2.3 Syntactic Implications

Despite the former generalizations about focus and topicalization with respect to scope taking, there are still two critical syntactic points that have to be clarified. First of all, why don't Q-NP topics in the left periphery show scope ambiguity like their focused counterparts? Secondly, how can MSA distinguish a topic subject from a focused counterpart in the left periphery? Both topicalized and focused Q-NPs in SVO order appear with the same nominative case, and there is

[61] # means that inverse scope is very hard for indefinite exceptional wide scope because topicalization weakens this reading.

no overt resumptive pronoun in the base argument position as is the case for the topicalized object. For either case, the subject base position cannot be distinguished overtly since it is occupied by either a trace (a deleted copy) or a null pronoun.

#### 5.2.3.1 Topic vs. Focus Syntactic Merger and Scope Taking

Ouhalla (1996), Soltan (2007) and Albuhayri (2019) distinguish the locations and the merger of topics and fronted foci in the left periphery. They argue that Spec TP is the starting point for the left periphery, not Spec CP as is the case for English (Chomsky, 1995; Rizzi, 1997). Building on this claim, they suggest that the topic of a clause is CLLDed to the left edge of the clause (cf. Chomsky, 1975). More clearly, it externally merges, or base generates, in Spec CP and it is co-indexed with a (null) pronoun in the argument position within the clause. Regarding a focused Q-NP in the left edge of the clause, it is established by movement from an argument position to Spec TP.

As argued, we should not expect scope ambiguity in a quantificational sentence with two Q-NPs, one of which is topicalized. This can be attributed to the location and the type of merger of topics, which blocks any narrow scope taking below a scope taker within the clause. More explicitly, the external merge of topics blocks any reconstruction in the argument position at LF. Further, QR is a local type of movement that does not exceed its clause boundary. For English, May (1977, 1985) and H&K (1998) propose that QR is an interpretive movement that adjoins a non-Wh Q-NP to any a projection below C. This implies that QR does not have the privilege to adjoin a nominal to left periphery (adjunction to CP) to invert the scope of a topic since it is mostly a local type of movement[62]. Syntactically speaking, a movement to the left periphery is an A'-movement that is feature-driven unlike QR.

[62] See May (1985) chapter (1&2) for Wh-word scope with respect to quantifiers and H&K (1998:135) for topicalized Q-NPs and their wide scope.

In contrast to English, Spec TP in Arabic is the location of wh-words and focused nominals (Ouhalla, 1996; Soltan, 2007; Albuhayri, 2019). Any movement (internal merger) from an argument position to Spec TP has to be an A'-movement to value semantic features. Even if we witness any scope ambiguity between a Q-NP or Wh-word in Spec TP and another scope taker within the clause, it is motivated by reconstructing the moved nominal to its base position at LF (cf. Beghelli, 1997 for Wh-pair-list reading; Albuhayri, 2019 for focus fronting). The following example shows that a focused Q-NP and Wh-word (pair-list vs. individual readings) do show scope ambiguity due to the indicated reconstruction at LF:

(14)

**a. Q-pair-list:**

| | | | | | |
|---|---|---|---|---|---|
| **ma:ða$_{(i)}$** | iʃtarat | kul-u | bint-in | **t$_{(i)}$?** | (what > ∀) (∀ > what) |
| **what$_{(i)}$** | bought | every-Nom | girl-Gen | **t$_{(i)}$?** | |

"what did every girl buy?"

**b. Focus:**

| | | | | | |
|---|---|---|---|---|---|
| **[dumi:at-an]$_{(i)foc}$** | iʃtarat | kul-u | bint-in | **t$_{(i)}$** | (∃ > ∀)=one doll |
| **[$_{Indf}$-doll-$_{Acc}$]$_{(i)foc}$** | bought | every-Nom | girl-Gen | **t$_{(i)}$** | (∀ >∃)= one for each |

"every girl bought A DOLL."

Sentences (a&b) are ambiguous due to the scope interaction between the existential Q-NPs and the universal quantifier. For (a), the scope ambiguity is caused by the Q-NP *kul:-u bint-in* "every girl" and the existential wh-word *ma:ða* "what". The individual surface scope reading of the question implies that the question is about one item that all the girls as a group bought. For the pair-list inverse scope reading that is derived by reconstructing the Wh-existential under the universal quantifier, the question here is about what each girl bought[63]. The same applies to the focused Q-

[63] The given analysis is a simplified version of the pair-list readings of questions. For further semantic analysis, see Szabolcsi (1997c).

NP in (b), one doll for the surface scope and more than one for the inverse scope counterpart. In sum, topics do not show any scope ambiguity with respect to other Q-NP within the clause, while fronted focused Q-NPs and wh-existentials permit scope ambiguity due to LF reconstruction.

#### 5.2.3.2 Fronted Focus vs. Topic: Subjects and Objects

Another syntactic implication is the difference between fronted focus and topicalized subjects and objects in the left periphery. I will start with objects since their patterns seem straightforward. In Arabic, a fronted focus object is derived by movement to the left side of the clause, preserving its accusative case, and the evacuated base position is empty (leaving a covert copy or a trace), as in (13) or (15)(a) below. However, when the object undergoes CLLD due to topicalization, it appears with the default nominative case and its base position is filled with a resumptive pronoun as in (15)(a):

(15)

**Context:** speaker contrasts a given information about what Fahd read:

a. **[al-kita:b-a$_{(i)}$]$_{foc}$** qaraʔa fahd-un **t$_{(i)}$** **(Focus)**

**[the-book-Acc$_{(i)}$]$_{foc}$** read Fahd-Nom **t$_{(i)}$**

"Fahd read THE BOOK"

**Context:** the speaker provides information about the book that the addressee wrote:

b. **[al-kita:b-u$_{(i)}$]$_{top}$** qaraʔa-**hu$_{(i)}$** fahd-un **(Topic)**

[**the-book-Nom$_{(i)}$]$_{top}$** read-**it$_{(i)}$** Fahd-Nom

"(as for) the book, Fahd read it."

The difference between (a&b) above is that the object *al-kita:b-a* in the former is a focus, while in the latter, it is a topic. Overall, the distinctions between the two types are associated with case and resumption.

On the other hand, an SVO subject that can be a topic or focus does not show the indicated overt morphological distinctions since the subject case is always nominative, which can be either

default for the topic or contributed by T for the focused subject. In addition, the resumptive pronoun for the topicalized CLLD subject has to be null (cf. relative clause subject extraction[64]). Therefore, the distinction between a focused and topicalized subject differs from its object counterpart:

(16)

**Context:** contrasting information: *Ali read the book*:

a. **[fahd-un]$_{(i)\ foc}$** qaraʔa **t$_{(i)}$** al-kita:b-a **Focus**

**[Fahd$_{\text{-Nom}}$]$_{(i)\ foc}$** read **t$_{(i)}$** the-book-Acc

"FAHD read The book."

**Context:** what about Fahd?

b. **[fahd-un]$_{(i)top}$** qaraʔa **~~hwa~~$_{(i)}$** al-kita:b-a$_{(i)}$ **Topic**

**[Fahd$_{\text{-Nom}}$]$_{(i)top}$** read **~~he~~$_{(i)}$** the-book-Acc$_{(i)}$

"as for Fahd, he read the book."

Despite the contextual distinctions, there are distinctive PF parameters that speakers rely on to distinguish topics from focus, in addition to resumption and case distinctions. Moutaouakil (1989) and Ouhalla (1996) argue that a focused nominal, in the left periphery, is stressed (*AN-Naber*) while topics are not. Another phonological distinction is that when a topic is uttered, there is a minimal pause between the topic and the rest of the clause. In contrast, a focused nominal in the left periphery does not encounter such pausing. Thus, PF clues show how to distinguish a topic from a fronted focused nominal in the left edge of the clause when case and resumption distinctions

[64] Regarding relative clauses of MSA, subject relativization in MSA differs from object relativization. For the latter, the resumption is overt in the relative clause object position while it is covert for the subject, as follows:

a. dʒa:ʔa al-walad-u **al:aði** jħibi-ni: relativized subject (covert pronoun)
came the-boy **who** loves-~~He~~-me
"the boy who loves me came"

b. dʒa:ʔa al-walad-u **al:aði**: ʔaħib**-uh** relativized object (overt pronoun)
came the-boy **whom** loves-**him**
"the boy whom I love came."

are not available. Consequently, relying on these PF distinctions, we can know when scope ambiguity is permitted for SVO.

### 5.2.4 Disambiguating Scope via Topicalization

Before showing the MSA clause structure and the possibility of QR in SVO and VSO based on the above observations, I would like to support the above findings and the claim that Arabic speakers resort to the left periphery (topicalization) to disambiguate the scope of a Q-NP with respect to other scope takers within the sentence.

#### I. Cardinal Distributivity

Semantically, Beghelli (1997), Beghelli and Stowell (1997), and Szabolcsi (1997b) argue that when a sentence has existential cardinal arguments (subject and object), the distributivity of the wide scope subject is stronger where the subject c-commands the object at spell-out, but inverse scope distributivity might be hard to obtain[65] (in contrast to B&C, 1981). For MSA, the appearance of cardinals in VSO order allows both possibilities as shown previously in (10), but I posit that the inverse scope distributivity weakness is similar to the covert inverse scope of the object universal strong distributive quantifier when taking wide scope over an existential, which requires a context (cf. Barker, 2015:69; Reinhart, 1997):

(17) ħadˤara θala:θat-u tˤula:b-in (muxtalifi:n) arbaʕat-a idʒtima:ʕa:t-in (fi: al-ʕa:ʃirah)
attended three-Nom students-Gen (different) four-Acc meeting-Gen (at ten)
"three (different) students attended four meetings at 10 o'clock."

i. there are three students such that each one attended (possibly different) four meetings at 10 o'clock.

ii. there are four meetings at 10 o'clock such that each was attended by four different students.

[65] The issue is known as weak distributivity or pseudo-distributivity as indicated by Beghelli & Stowell (1997: 94). However, I think weak distributivity does not rule out distributivity of the object cardinal when it takes wide scope, since indefinites can have exceptional wide scope. For more information about the debate, see Szabolcsi (2010:113), Reinhart (1997: footnote 24).

As shown, the above sentence is ambiguous since it occurs in VSO order. Further, adding *muxta-lifi:n* "different" and *fi: al-ʕa:ʃirah* "at ten o'clock" support inverse wide scope and distributivity. Another way of disambiguating the readings of the sentence is to topicalize the object as follows:

**Context:** what happened to yesterday's meetings?

(18) arbaʕat-u idʒtima:ʕa:t-in ħadˤara-**ha** θala:θat-u tˤula:b-in muxtalifi:n fi al-ʕa:ʃirah
four-Nom meeting-Gen attended-them three-Nom students-Gen different at ten
"three different students attended four meetings at 10."
(#∃3>∃4)=12 meeting, (∃4>∃3)= 12 students

Topicalizing *arbʕat-a idʒtima:ʕat-in* "four meetings" yields wide scope for the existential cardinal, in addition to strengthening the distributivity of the object over the subject in that the sentence can be read as *there are four meetings such that each one is being attended by possibly three different students*.

## II. Negation

Similarly, the scope of negation in VSO is ambiguous in that Q-NPs can be interpreted below or above negation. Topicalization is the only way to disambiguate the scope:

(19) **VSO**

a. *lam* jusˤuit kul:-u tˤa:lib-in (¬>∀) (∀>¬)
did-not vote every-Nom student-Gen
" every student did not vote."
i. it is not the case that every student voted.
ii. every student x is such that it is not the case that x voted.

**Context:** what about the students and the election? did they vote?

b. [kul:-u tˤa:lib-in]**top** *lam* jusˤuit (*¬>∀)(∀>¬)
[every-Nom student-Gen]**top** did-not voted
"as for every student, he did not vote."
i. *it is not the case that every student voted.
ii. every student x is such that it not the case that x voted.

Sentence (a) emphasizes the possibility of inverse scope when the Q-NP occurs post negation. For (b), if the sentence with a topicalized subject Q-NP is followed by *because three of the students voted* which implicates that the Q-NP is interpreted in the domain of negation, it is going to lead to a contradiction because negation after a topic states that the following predicate does not hold for the individual(s) within the DR of Q-NP. However, this continuation disambiguates (a) by emphasizing the surface scope of negation, in contrast to what is possible for (b).

The former examples show that topicalization disambiguates the scope of a Q-NP in the presence of negation. However, when the Q-NP appears before negation via focus movement, the ambiguity is still available:

(20)

**Context:** contrasting the information that every student voted:

a. [kul:-u t$^{ʕ}$a:lib-in]**foc** lam jus$^{ʕ}$uit
[every-Nom student-Gen]**foc** did-not voted
" every student did not vote."
i. it is not the case that every student voted. (some did)
ii. every student x is such that it not the case that x voted (none of them did)

**Context:** contrasting the information that Fahd read a book (specific or any book):

b. [kita:b-an]**foc** lam jaqraʔ fahd-un
[book-Acc]**foc** did-not read Fahd-Nom
" Fahd did not read A BOOK."
i. it is not the case that Fahd read some book (read none or more than one).
ii. there is some book x such that Fahd read did not read x(one specific book not being read).

The sentences above are ambiguous despite the appearance of the Q-NP in the left periphery. This ambiguity is associated with the fronted focus Q-NP's ability to reconstruct at LF below negation as shown above.

## III. If Clauses

In chapter (2), the issue of exceptional scope taking of indefinites has been approached by looking at different examples of this type. Among the cases that have been considered is the exceptional wide scope of indefinites within conditional if-clauses as follows:

(21) If **three relatives of mine** die, I will inherit a house.

To recall, there are three readings for the sentence. Reinhart (1997) and Winter (1997) attempt to account for the wide scope specific interpretation of the underlined indefinite *three relatives of mine*. According to this reading, the indefinite has exceptional wide scope that causes its specificity (there are three specific relatives) despite the if-clause island constraint and the locality of predicate distributivity. Consider the following possible readings that are caused by the possible scope takings (if-clause domain is represented by *[]* brackets and the predicate distributivity is represented by the operator: $(\forall y_{(atomic)} \leq x)$:

i. **∃ > if-conditional > $(\forall y_{(atomic)} \leq x)$**

∃x [ |x|=3 ∧ relatives of mine (x) ∧ *[* **[∀y $_{(atomic)} \leq$ x** die(y)] ⟶ I will inherit a house*]*]

= (only one house is inherited by the death of the three relatives )

ii. **if-conditional > $(\forall y_{(atomic)} \leq x)$ > ∃**

*[* ∃x [ |x|=3 ∧ relatives of mine (x) ∧ **[$\forall y_{(atomic)} \leq$ x** die(y)] ⟶ I will inherit a house*]*]

= (cardinal reading, whenever any three of my relatives die, I will inherit a house )

iii. **∃ > $(\forall y_{(atomic)} \leq x)$ >if-conditional**

∃x[ |x|=3 ∧ relatives of mine (x) ∧ [∀y $_{(atomic)} \leq$x *[*die(y) ⟶ I will inherit a house*]*]]

= (one house inherited by the death of each one of my three relatives =3 houses total)

The above LFs represent the possible readings. (i) is the one that is under discussion where the scope is ordered as follows: ∃ > if > **$(\forall y_{(atomic)} \leq x)$.** According to Reinhart and Winter, this reading cannot be obtained by QR due to an island constraint that prevents extraction out of if-clauses. Even if we assume that QR is island-free, we will get a reading like (iii) because distributivity will

have wide scope over the conditional. If we leave the indefinite *in situ* to avoid (iii), we will get the reading in (ii) with a narrow scope cardinal reading of the indefinite. Therefore, that indefinite has to be interpreted *in situ* via a choice function with wide scope existential closure to avoid generating any unwanted readings and respect syntactic movement constraints, as follows:

(21)' $\exists f[\mathrm{CH}(f) \wedge [\forall \mathbf{y_{(atomic)}} \leq f(|x|=3 \wedge \text{relatives of mine (x)}) \text{ die(y)}] \longrightarrow \text{I will inherit a house}]$

For MSA, the same issue of ambiguity (mostly i&ii) is present despite the preference for the surface scope reading as in the following[66]:

(22) ʔiða: ma:t-a **θala:θt-u** **ridʒa:l-in** **min** **aqa:rb-i** sa-ʔariθ-u bait-an
if died **three-Nom** **men-Gen** **of** **relatives-my** will-inherit-I a house
"if (any/specific) three men of my relatives die, I will inherit a house."

(23) ʔiða: **θala:θt-u** **ridʒa:l-in** **min** **aqa:rb-i** ma:t-u sa-ʔariθ-u bait-an
if **three-Nom** **men-Gen** **of** **relatives-my** died will-inherit-I a house
"if (any/specific) three men of my relatives die, I will inherit a house." **(Focus)**

According to the above, we can suggest that the indefinite *θala:θt-u ridʒa:l-in min aqa:rb-i* "three men of my relatives" can have exceptional wide scope in both VS order as in (22) and in an SV focus fronting context as in (23). The suggested ambiguity can be witnessed when a speaker utters either of the above sentences in a conversation and the addressee may ask the speaker to specify which reading (cardinality vs. specificity) is meant, or the addressee will figure out which reading is conveyed via the context. Another observation is that the focused SV order, in (24), does not help to eliminate the cardinal reading because its landing site is Spec TP (below *ʔiða*: "if" that is located in C), which makes the indefinite within the scope of the conditional.

[66] I will modify the example to avoid the obligatory omission of the head noun in the cardinal partitive context
a. ? ʔiða: ma:t-a θala:θt-u **aqarib-in** min **aqa:rb-i**, sa-ʔariθ-u bait-an
if died three $_{\text{Indf-}}$relatives of relative-mine , will-inherit-I $_{\text{Indf-}}$house
"if three relatives of my relatives die, I will inherit a house."

To disambiguate the scope, cooperative speakers tend to topicalize (CLLD) the indefinite *θala:θt-u ridʒa:lin* "three men of my relatives" before the if-clause *ʔiða:* "if". This means that the indefinite becomes a topic. In this case, the indefinite has wide scope since it externally merges in Spec CP without overt movement or QR that causes an island violation or distributivity beyond the conditional. Regarding distributivity, the CLLD will allow predicate (verb) distributivity to apply to PRO that is bound by the topic. In this case, the distributivity is local within the clause boundary since there is no QR as follows:

(24) a. **θala:θt-u ridʒa:l-in min aqa:rb-i** ʔiða: ma:t-u sa-ʔariθ-u bait-an
**three**-Nom **men**-Gen **of relatives-my** if died- will-inherit-I Indf-house
"as for three men of my relatives, if they die, I will inherit a house."

b. [**CP** three men of my relatives$_{(1)}$ [**CP t**$_{(1)}$ [**C'**if [**TP**[…**VP** die (PRO$_{(1)}$ **$^{x/1}$**)]…

c. ∃x [ |x|=3 ⋀ men of my relatives (x) ⋀ [ **[∀y≤x** die(y)] ⟶ will-inherit-I a house]]= (only one house inherited )

The informal syntactic configuration in (b) shows the claim that no QR or any internal merger has been made to obtain the reading; rather the base argumental position is filled with PRO that is bound by the indefinite topic. This syntactic configuration matches the LF that is shown for English in (iii) previously.

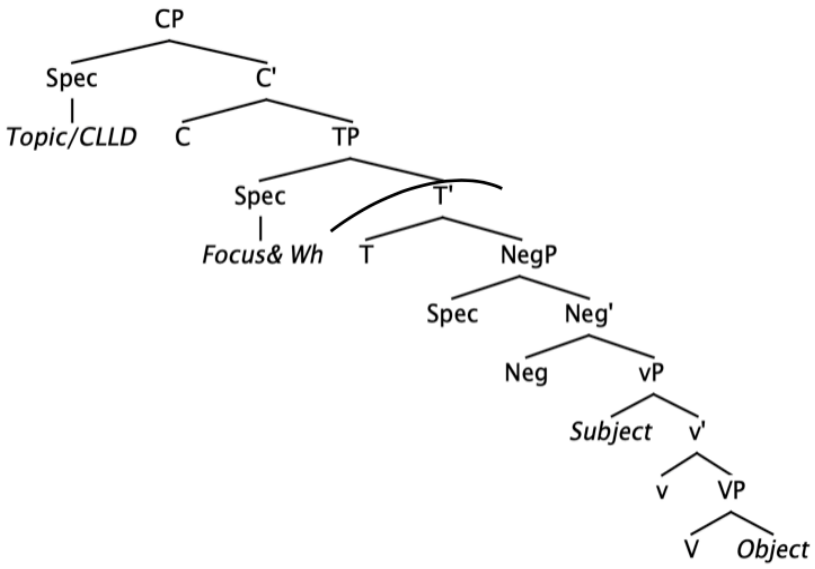
Overall, the aim of discussing this example is to show how MSA speakers disambiguate scope and to emphasize the argument that a Q-NP subject in SVO can be interpreted differently depending on the syntactic location (topic vs. focus).

### 5.2.5 Clause Structure: Focus &Wh vs. CLLD/Topics

To sum up our findings about MSA scope taking, it can be seen clearly that QR can invert the scope of Q-NPs in a VSO sentence. According to this word order, Q-NPs in argument position can have either a surface or an inverse scope interpretation depending on how LF QR determines the scope of these Q-NPs. However, the QR adjunction of quantifiers does not exceed the T node

(= C in English) because moving an element beyond this node has to be an A'-movement to value a feature in the left periphery like +Q or +F. For the SVO order, there are two cases with respect to the subject Q-NP. If it appears there via a Wh or focus internal merger, the sentence can show scope ambiguity due to reconstruction at LF. On the other hand, if that Q-NP is a CLLDed element in the left edge of the clause, it is not ambiguous. This argumentation supposes that QR does not adjoin an element in the left periphery (cf. May, 1985, 1977; Chomsky, 1976; H&K, 1998). The same applies to focused and topicalized objects too. These findings can be represented by the following structure[67] (a modified version of Soltan, 2007; Albuhayri, 2019; Aoun et al., 2009):

(25)




The above syntactic configuration shows the locations of topics and focus. The arch in the above derivation represents the boundary of the left periphery which QR does not exceed. Q-NP adjunction in VSO should not exceed the T node. Thus, QR can adjoin Q-NPs to any projection below T.

[67] In this structure, I have abstracted away from any syntactic debates about the locations of some projections such as NegP, focus and wh-words. For simplicity, split CP is not adopted. Further, the claims cannot be extended to the exceptional cases of indefinites' wide or de re readings that can scope out of a tensed clause. See Reinhart (1997) and Heim (1982) for more information.

## 5.3 Inverse Linking

As indicated in the introduction, Q-NP scope taking is not restricted to clauses, but a Q-NP within a complex nominal can scopally interact with other Q-NPs at clause-level. More specifically, if a Q-NP is embedded within a DP as a complement of PP that modifies the head noun, it can scope out of that DP to take wide scope as follows:

(26) A man from every city participated.

a. **Inverse Linking**

i. [TP [DP every city] λy[TP [*v*P[DP a [NP[NP man] [PP from(x, y)]]] λx[v' (x) participated…]]]]

ii. ∀y [city (y) ⟶∃x[ man (x) ∧ from (x,y) ∧ participated (x)]]

b. **Surface Scope (odd Pragmatically)**

i. [TP [*v*P [DP a [NP [NP man] [PP [DP every city] λy [PP from(x,y)]]]] λx[v' (x) participated…]]]

ii. ∃x[man (x) ∧∀y [city (y) ⟶from(x, y)] ∧ participated (x)]

The above sentence is mostly unambiguous since the inverse linking is more salient than the narrow scope reading of the universally quantified NP *every city*, which is odd pragmatically. The salient and more felicitous reading requires the Q-NP *every city* to evacuate its base position within the subject DP *a man from (~~every city~~)* via QR to adjoin to TP. This type of movement causes the co-variation of the individual men with the cities, which can be paraphrased as *for every city x, there is a man y from x such that x participated*.

This type of scope taking is a subject of debate[68] since the inverse linking reading requires the embedded universal Q-NP to move out of a complex DP via QR at LF. As shown in LF (26)(a),

[68] See May (1977; 1985), May & Bale, (2017), H&K, (1998), Sauerland, (2005), Charlow (2010); Barker (2015) for more discussions about inverse linking movement debate.

This type of movement causes an island violation because extraction out of a complex DP, especially in subject position, is prohibited syntactically. The same issue applies to English genitives where the complement (possessor) takes wide scope over its containing one as follows:

(27) Every man's wife participated.

i. ∀y [man (y) ⟶ participated (ιx.wife (y, x))]

ii. participated (ιx. ∀y [man (y) ⟶ wife (y, x)] ) **Odd Pragmatically**

For (27), the same possibilities of scope taking are present in ESG too. Accordingly, the wide scope of the universal complement is more felicitous because the other reading where the universal is interpreted within its containing DP as in (ii) is odd pragmatically. The only felicitous reading requires the universal Q-NP *Every man* to adjoin to TP.

The adjunction to TP of the inversely linked Q-NP at LF is supported by the scope interaction with other Q-NPs, other than its containing one, as well as the possibility that the inversely linked Q-NP can bind an argumental pronoun at LF as follows:

(28) **Scope Taking Felicitous Possibilities:**

a. A man$_{(x)}$ from every city$_{(y)}$ likes some girl$_{(z)}$. $(\forall_{(y)} > \exists_{(x)}, \exists_{(z)})$ $(\exists_{(z)} > \forall_{(y)} > \exists_{(x)})$

b. Every man$_{(y)}$'s wife$_{(x)}$ likes some girl$_{(z)}$. $(\forall_{(y)} > \iota_{(x)}, \exists_{(z)})$ $(\exists_{(z)} > \forall_{(y)} > \iota_{(x)})$

(29) **Binding Pronominal Arguments**

a. A man from **every city$_{(i)}$** likes **it$_{(i)(g)}$.**

**i. Inverse Linking & Binding:** ∀y[city (y) ⟶∃x[ man (x) ∧from (x,y) ∧ likes(x,y)]]

**ii. Surface Reading:** ∃x[man (x) ∧∀y [city (y) ⟶from (x,y)] ∧ likes (x,z)] where z is a free pronoun whose reference is determined by context (assignment function).

b. **Every man$_{(i)}$**'s wife likes **him$_{(i)(g)}$**.

**i. Inverse Linking:** ∀y[man (y) ⟶ likes (ιx.wife (x, y) ,y)]

**ii. Surface Reading:** likes (ιx.∀y[man (y) ⟶ wife (x, y)],z) where z is a free pronoun whose reference is determined by context.

If we consider the felicitous readings of example (28), we can notice that, in (a), the indefinite object *some girl* and the universal Q-NP *every city* interact scopally. This can be seen by the co-variation of a *man* and *some girl* when they occur in the scope of *every city* as shown by the order of the Q-NPs ($\forall_{(y)} > \exists_{(x)}, \exists_{(z)}$). In addition, the second reading is shown by the following order of Q-NPs ($\exists_{(z)} > \forall_{(y)} > \exists_{(x)}$) where *some girl* takes wide scope over all other Q-NPs; consequently, it becomes specific and the indefinite *a man* varies with *every city* only. Despite some variation, the same ambiguity in (b) is caused by the scope interaction of the inversely linked Q-NP *Every man* and the existential *some girl*. As shown above, the universal is inversely linked in both readings ($\forall_{(y)} > \iota_{(x)}, \exists_{(z)}$) ($\exists_{(z)} > \forall_{(y)} > \iota_{(x)}$) where it scopes out its containing definite DP to adjoin to the clause. As a result, it scopally interacts with the existential Q-NP *some girl* as well as its containing DP, which causes the variation of wives.

Regarding the binding examples in (29), we can see that *every city* in (a) and *every man* in (b) can bind the object pronouns *it* and *him* semantically. Further, the PF singular forms of the pronouns confirm this binding. If the universal Q-NP in each example does not scope out of its containing complex DP, we would expect the pronouns to be free and their references to be determined contextually. In the following subsection, the same issue will be approached in MSA to see how this phenomenon applies to this language.

### 5.3.1 Inverse Linking in MSA

Generally, languages share the possibility of inversely linked Q-NPs despite the fact that some of them can be considered scope rigid languages at LF. For example, German and Hungarian allow inverse linking at LF (Brody & Szabolcsi, 2003; Bobaljik & Wurmbrand, 2012). Thus, the differences between languages are found in the covert inverse scope readings at clause-level while

inverse linking is unmarked. The following examples from MSA confirm the possibility of inverse linking based on scope taking and the binding of pronominals at clause-level:

(30) **PP**

a. juħibu radʒul-un$_{(x)}$ min kul:-i madinat-in$_{(y)}$ bint-an$_{(z)}$
loves Indf-man-Nom$_{(x)}$ from every-Gen city-Gen $_{(y)}$ Indf-girl-Acc$_{(z)}$
" a man from every city loves a girl." $(\forall_{(y)} > \exists_{(x)}, \exists_{(z)})$ $(\exists_{(z)} > \forall_{(y)} > \exists_{(x)})$

b. [radʒul-un min **kul:-i** **madinat-in**$_{(i)}$]$_{\textbf{top}}$ juħibu-**ha**: $_{(i)(g)}$
[man-Nom from **every-Gen** **city-Gen(i)**]$_{\textbf{top}}$ loves-**it**$_{(i)(g)}$
" a man from every city loves it."

(31) **CS**

a. qa:balat zawdʒat-u$_{(x)}$ kul:-i radʒul-in$_{(y)}$ bint-an$_{(z)}$
met wife-Nom$_{(x)}$ every-Gen man-Gen$_{(y)}$ Indf-girl-Acc $_{(z)}$
" every man's wife met a girl." $(\forall_{(y)} > \iota_{(x)}, \exists_{(z)})$ $(\exists_{(z)} > \forall_{(y)} > \iota_{(x)})$

b. [zawdʒat-u **kul:-i** **radʒulin**$_{(i)}$]$_{\textbf{top}}$ tuħib-**uh** $_{(i)(g)}$
[wife-Nom **every-Gen** **man-Gen(i)**]$_{\textbf{top}}$ loves-**him**$_{(i)(g)}$
" every man's wife loves him."

The above examples (30) and (31) show that inverse linking is possible in MSA as is the case for English. The co-variation of the existential objects and the containing DPs, and the pronominal binding facts confirm this argument, as shown by the readings and the co-indexations. This implies that the embedded universal Q-NPs within the complex nominals can undergo QR at LF to move out of their base positions to take scope at clause-level. Further, if the complex DP where the universal Q-NP base generates occurs in the left periphery as in the (b) examples, we can see that the inverse linked Q-NP can adjoin to CP or TP when its containing DP occurs there. This is supported by the ability of the inversely liked Q-NP to bind pronominals

What can be concluded here is that there is nothing exceptional when it comes to inverse linking. However, still, there is one point that needs to be considered: does the inversely linked

universal respect the generalization that has been drawn about the left periphery boundary? This question has to be asked here since inverse linking is an instance of QR that does not obey the island constraint which prevents extraction out of a complex DP.

### 5.3.2 Inverse Linking and Left Periphery

Under this sub-section, we would like to see how the suggestion about the left periphery can be extended to inverse linking. Since inverse linking a Q-NP out of a complex DP with a PP is beyond the scope of this enterprise, I will restrict my discussion to CS. The argument that I am advocating here is that inverse linking post-verbally does not exceed the limit of the left periphery. In addition, inverse linking is always possible post-verbally or in the left edge of the clause, but still, the constraints that apply to its containing DP apply to the inversely linked Q-NP. Accordingly, there are two implications for this claim:

i. Only Q-NPs in the left periphery that can reconstruct (focus) can have narrow scope with respect to the inversely linked universal Q-NP post-verbally.

ii. When the inversely linked Q-NP base generates within a topic in the left edge of the clause, it cannot have narrow scope with respect to other scope takers below CP.

Let us consider the first implication. It supports our main claim about QR inverse scope that is allowed only post-verbally. It proposes that an inversely linked Q-NP can have wide scope over a focused Q-NP due to reconstruction, as follows:

(32)

**Context:** what did every boy's teacher read?

a. [kita:ban$_{(z)}$]$_{\mathbf{foc}}$ qaraʔa muʕal:im-u$_{(x)}$ kul:-i walad-in$_{(y)}$ t$_{(z)}$

[Indf-book-Acc$_{(z)}$]$_{\mathbf{foc}}$ read teacher-Nom$_{(x)}$ every-Gen boy-Gen$_{(y)}$ t$_{(z)}$

" Every boy's teacher read A BOOK." ($\exists_{(z)} > \forall_{(y)} > \iota_{(x)}$) ($\forall_{(y)} > \iota_{(x)}$, $\exists_{(z)}$)

**Context:** The conversation is about the school library books. The speaker is providing information about a specific book that is not familiar to the addressee:

b. [kita:bun$_{(z)}$]**$_{top}$** qaraʔa-hu$_{(z)}$ muʕal:im-u$_{(x)}$ kul:-i walad-in$_{(y)}$
[Indf-book-Nom$_{(z)}$]**$_{top}$** read-it$_{(z)}$ teacher-Nom$_{(x)}$ every-Gen boy-Gen$_{(y)}$
" some book, every boy's teacher read it." $(\exists_{(z)} > \forall_{(y)} > \iota_{(x)})$ $(*\forall_{(y)} > \iota_{(x)}, \exists_{(z)})$

The above sentences show that inversely linked universal QP *kul:-i walad-in* "every boy" obeys the constraint of the left periphery despite the assumption that it can skip a DP island. As shown by (a) above, the universal Q-NP can take wide scope over the existential Q-NP *kita:ban* "a book" that occurs in the left edge of the clause when the latter is a focus that can reconstruct in its base position. This reconstruction causes the sentence scope ambiguity as follows $(\exists_{(z)} > \forall_{(y)} > \iota_{(x)})$ and $(\forall_{(y)} > \iota_{(x)}, \exists_{(z)})$. In contrast, (b) does not show this type of ambiguity. The reading where the Q-NPs have the following relative scope $(\forall_{(y)} > \iota_{(x)}, \exists_{(z)})$ is not available since the existential *kita:bun* "a book" is a CLLD topic.

Another supportive point for this claim comes from binding. A noun with a possessive pronoun in the left periphery can be bound by an inversely linked Q-NP or its containing definite noun only if that left-peripheral noun is focused, as in the following example:

(33) a. [kita:b-a-**hu**$_{(x/y/z)}$]$_{(g)}$**$_{Foc}$** qara? muʕal:im-u$_{(x)}$ kul:-i walad-in$_{(y)}$ t$_{(g)}$
[book-Acc-his$_{(x/y/z)}$]$_{(g)}$**$_{Foc}$** read teacher-Nom$_{(y)}$ every-Gen Indf-boy-Gen$_{(z)}$ t$_{(g)}$
" His BOOK$_{(g)}$, every boy's teacher read t$_{(g)}$."

b. [kita:bu-**hu**$_{(*x/*y/z)}$] $_{(g)}$ **$_{top}$** qara?-**hu$_{(g)}$** muʕal:im-u$_{(x)}$ kul:-i walad-in$_{(y)}$
[book-Acc-his$_{(*x/*y/z)}$]$_{(g)}$ top read-**it$_{(g)}$** Indf-teacher-Nom$_{(x)}$ every-Gen Indf-boy-Gen$_{(y)}$
"As for his book, every boy's teacher read it."

Sentence (a) shows that a possessive pronominal that combines with the noun *kita:ba-hu* "his book" in Spec TP can be bound by the definite CS DP *muʕal:im-u…* "teacher…" or its inversely linked Q-NP *kul:-i walad-in* "every boy". This binding is possible at LF, where the fronted focused DP with the possessive pronoun can reconstruct in object position, where it base generates. For (b),

the same binding is impossible since topics have obligatory wide scope and they base generate in Spec CP. Therefore, the narrow scope binding is not available.

The second implication about the inversely linked Q-NP is the impossibility of taking narrow scope with respect to another scope taker post-verbally when the genitive DP that contains the inversely linked universal is a topic:

**Context:** what about the boys teacher? What did they do before class?

(34) [ muʕal:im-u$_{(x)}$ [kul:-i walad-in$_{(y)}$] ]**$_{top}$** qaraʔa θala:ta kutu:b-in$_{(z)}$
[teacher-Nom (x) [every-Gen boy-Gen (y)]**$_{top}$** read three-Gen books-Gen(z)
"As for every boy's teacher, he read three books." (#$\exists_{3(z)}$>$\forall_{(y)}$> ι$_{(x)}$)
($\forall_{(y)}$> ι$_{(x)}$ > $\exists_{3(z)}$)

In (34)(a), the complex CS *muʕal:im-u kul:-i waladin* "every boys teacher" is a topic. Therefore, the inversely linked Q-NP cannot have narrow scope to be in the domain of the *θala:ta kutu:b-in* "three books" as (#$\exists_{3(z)}$>$\forall_{(y)}$> ι $_{(x)}$). This implies that topics and their inversely linked Q-NPs may not have narrow scope below any Q-NP within the clause.

## 5.4 Chapter Conclusion

This chapter has reviewed some aspects of scope taking in MSA. The given findings suggest that this language's quantificational sentences can show scope ambiguities caused by QR at LF. However, scope ambiguity is restricted to the neutral VSO word order, since QR is permitted post-verbally. Regarding the SVO order that is derived from the latter, it may encounter some scope ambiguity based on where and how the preverbal Q-NP merges in the left peripheral side of the clause. As pointed out, QR does not move an element to this side of the clause, but the ambiguity is caused by LF scope reconstruction. If the preverbal Q-NP is CLLDed to Spec CP, the quantificational sentence is not ambiguous because CLLD topics always have wide scope. This wide scope taking is associated with the location and the impossibility of reconstruction. On the

other hand, if the Q-NP appears there via A'-displacement to the left periphery, then the sentence is scopally ambiguous, since this A'-movement can reconstruct at LF. From this argumentation, we can conclude that MSA is a partially scope-rigid language like Hungarian, because topicalization is a part of its word order and this order freezes the scope. Regarding inverse linking, we saw that none of the cited languages that have different inverse scope patterns block this type of QR, and the same applies to MSA. Overall, the presented information can be considered as a starting point for a greater enterprise to approach scope taking in MSA.

# CHAPTER (6) Conclusions and Prospective Implications

This chapter summarizes the previous chapters' findings by presenting the main arguments and answers to the raised research questions. By the end of the chapter, some implications and guidelines for future work will be presented.

## 6.1 Summaries and Conclusions

This thesis aims to provide syntactic and semantic accounts for nominal and quantificational CSs in MSA. The goal that has been achieved by the previous chapters is discovering the concealed syntactic and semantic factors of CS that contribute various interpretations of these forms to build compositional semantic analyses and logical forms. The discussions and the findings of these chapters can be summarized as follows:

Chapter (2) approaches CS (in)definiteness from syntactic and semantic sides. This chapter provides accounts for the (in)definiteness marking and inheritance of nominal CS. The argumentations of that chapter aim to explain how and when the proposed inheritance takes place, in addition to its relation to semantic (in)definiteness. This issue was approached by looking at the syntax of (in)definite CS by comparing it to its simple DP counterpart in order to highlight the syntactic variations between these structures with respect to definiteness. It has been proposed that nouns are specified for (in)definiteness in the lexicon (Borer, 1999; Siloni, 1997; Danon, 2008, 2011), where this feature is viewed as an un-interpretable valued feature whose interpretation is conditioned by projecting a D head that bears the interpretable unvalued featural counterpart (cf. Pesetsky & Torrego, 2007). Accordingly, syntactic agreement is the mechanism that accounts for this feature's interpretation. The same application is implemented for complex CS DPs, where the D head agrees with the complement that bears this feature. In either case, I have argued that there is a suggested projection (dP) that contributes the morphological agreement for the head and the

genitive case for the complement. After building the needed derivations for (in)definite CS, the discussion shifts to consider the interpretations of the inherited definiteness features at LF. The semantic argumentation introduces the notions of semantic (in)definiteness and provides compositional static analyses for the mapped syntactic derivations of (in)definite nominal CS at LF.

Chapter (3) considers different interpretations of nominal CSs that are caused by the dichotomy of M-CS vs. P-CS, in addition to the pragmatic relations with respect to its interactions with lexically relational nouns. The aim is to provide a semantic analysis that reflects these factors' interactions on logical forms and the compositionality of nominal structure. Regarding the M-CS and P-CS readings, the difference between these types is associated with the type of the complement of this genitive structure: NP vs. DP. It has been argued that these complement selections are attributed to the RP ($R_{pred}$ vs. $R_{ind}$) projection that mediates the relations within M-CS and P-CS. For the interactions of lexical vs. free relations, it was shown that RP heads are sensitive to relational nouns in that their relation can be determined lexically or contextually. This claim is reflected semantically by four different possible compositional interpretations for the nominal CS.

Chapter (4) approaches QCS in MSA by looking at the quantifiers that head a CS and their DR complements. I propose that a quantificational CS is a QP whose head is a quantificational determiner restricted by an NP or PartP+definite noun. Accordingly, most of the quantifiers that head QCS are partitives whose DR is a null PartP projection. This null projection allows them to quantify over subsets of the individual sum contributed by the definite plural noun, in contrast to the distributive universal *kul:* that is restricted by an NP. The distributivity and collectivity entailments of the universal quantifier *kul:* are attributed to the different types of the DR, where PartP is for the collective construal vs. NumP+NP for the distributive counterpart. It has been argued that associating these construals of this universal quantifier to the DR syntactic category is more

consistent than attributing it to the definiteness value of the quantifier. Regarding the issue of definiteness distinctions on the quantifiers, it has been posited that the definiteness marking on the DR noun restricts the domain to contextually salient individuals, while this value has no semantic impact on the quantifier itself.

Finally, chapter (5) has reviewed some aspects of scope taking in MSA with respect to inverse scope and inverse linking readings. The findings of this chapter suggest that this language's quantificational sentences can show scope ambiguity which is caused by LF QR in VSO word order. On the other hand, the SVO order encounters some exceptions because the subject in this order occurs in the left periphery, to which QR does not extend. Scope ambiguity is possible in this word order when the subject Q-NP is a focused nominal, due to its capability to reconstruct. When it is a topic, the scope is frozen because it is a CLLD topic that externally merges in Spec CP. Therefore, it reserves the widest scope above any scope taker. As a result, the quantificational sentence with a topic subject is scopally unambiguous. With respect to the DP-level, the inverse linking of a Q-NP within a complex DP (CS or modified by PP) is possible and the left peripheral edge constraint is respected.

## 6.2 Prospective Implications for Future Work

The present analysis has been focused on quantificational and nominal CS. However, still there are other types of CS beyond the discussed types. These CSs differ from the discussed ones since one type is headed by an adjective (adjectival CS) and the other is headed by a deverbal noun (deverbal CS). Similarly, the internal structures of these forms are masked by the CS PF uniformity that blocks the overtness of their distinctive syntactic and semantic aspects.

### I. Adjectival CS

As mentioned, this CS is headed by a pre-nominal adjective whose complement is a DP. In this CS, the adjective can modify its complement or parts of the individual sum that is denoted

by the complement as in (1)(a). On the other hand, the adjectival CS can contribute a complex modification to an external noun as in (1)(b):

(1) a. iʃtari:tu **dʒadi:d-a** **al-kutib-i**
bought-I **new** **the-books-Gen**
"I bought the new book(s) or I bought the new book(s) of a given set of books."

b. raʔi:t-u bintan **dʒami:lat-a** **al-wadʒh-i**
saw-I Indf-girl-Acc **beautiful-Acc** **the-face-Gen**
lit trans: "I saw a girl with the beautiful face."

In (a), the adjectival CS is the *dʒadid-a al-kutib-i* "the new books". The head of the CS is the adjective *dʒadi:d-a* "new" and its complement is the noun *al-kutib-i* "the books". As shown, the adjective *new* can modify the books by indicating that they are new. Alternatively, it can modify a subset of the books by saying that I bought some new books of the given books. In (b), the issue differs in that the adjectival CS *dʒami:lat-a al-wadʒh-I* "beautiful face" builds a complex description that modifies the girl, which can be paraphrased as "I saw a girl whose face is beautiful". Hence, the distribution of the adjectival CS distinguishes these cases. This issue has been viewed syntactically by Fehri (1999), Kremers (2003) and other syntactic works. However, this issue requires detailed semantic work to explain the core of the relation and the definiteness contribution in either case. Another question with respect to this issue is how the analyses that are given for nominal CS can be extended to account for this issue.

## II. Nominalization and Deverbal CS

Another related issue is nominalization and deverbal nouns. A deverbal noun can head a CS and its complement can have different thematic roles as follows:

(2) a. darb-u ʕali-in a:laman-i (Ali either theme or agent)
beating-Nom Ali-Gen hurt-past-Gen
"the incident of beating Ali hurt me or I was hurt by Ali when he beat me."

b. darb-u ʕali-in muʔlimun (Ali is a possessor)
beating-Nom Ali-Gen painful
"Ali's beating is painful."

c. darb-u ʕali-in li-ʔaħmadi:n a:lamani (Ali is agent)
beating-Nom Ali-Gen to-Ahmed-Gen hurt-me
"Ali's beating of Ahmed hurt me."

d. darb-u ʕali-in ʔaħmadan a:lamani (Ali is agent)
beating-Nom Ali-Gen Ahmed-Acc hurt-me
"Ali beating Ahmed hurt me."

In each example it can be noticed that the nominalized noun *darb-u* "beating" and its following argument Ali are components of CS where the nominalized verb is the head of the CS while Ali is the complement. For example (a), the sentence here is ambiguous between considering Ali as an agent or a theme. For the agent reading, the theme is the speaker. In contrast, viewing Ali as a theme represents the passive reading. Regarding (b), Ali can be construed as a possessor rather than an agent. The nominalized verb here can be viewed as a noun that denotes the kind of beating that pertains to Ali. The last two examples show the nominalized verb appearing with its arguments, agent and theme, but the only difference is caused by the presence of the preposition before the theme, which is required when the nominalization process takes place before the verb merges with its internal argument.

This type of CS can be approached by looking at the interactions of three linguistic components: morphology, syntax, and semantics. The morphological part has to explain when the affixation of the melodic template of nominalization to the verb takes place in the derivation to derive the gerund form (before or after the verb combines with its arguments). Regarding the syntactic part, it has to focus on the nominalized CS based on its interaction with its arguments. More precisely, it needs to draw the distinction between the theta roles of the subjects (complement of CS)

that appear within the nominalized verb (agent, possessor), since every type of subject has a different syntactic structure, as proposed by Abney (1987) and Kratzer (1996) for English gerunds. These differences, according to Abney and Kratzer, are caused by when the nominalization takes place in the syntactic derivation. Also, this factor affects the case assignment of the object of the nominalized verb that is either achieved by the existence of a Voice Phrase projection (counterpart of little v) or an overt preposition in the absence of that projection (Kratzer, 1996). After developing the syntactic derivation, it has to be reconsidered from a semantic perspective by deriving a different LF for each reading. Lastly, the phenomenon of (in)definiteness interpretation on the nominalized CS has to be considered to show how this aspect affects the denoted events of the nominalized verbs. The suggested semantic framework to deal with nominalization is Davidson's (1967) event semantics, which is further developed by Parsons (1990) (Neo-Davidsonian).

# REFERENCES


Abbott, B. (1996). Doing without a partitive constraint. In J. Hoeksema (Ed.), *Partitives: Studies on the syntax and semantics of partitive and related constructions* (pp. 25-56). Mouton de Gruyter.

Abney, S. P. (1987). *The English noun phrase in its sentential aspect* (Doctoral dissertation, Massachusetts Institute of Technology).

Abusch, D. (1993). The scope of indefinites. *In Natural Language Semantics*, *2*(2), 83-135.

Adger, D. (2003). *Core syntax: A minimalist approach*. Oxford University Press.

Albuhayri, S. M. (2019). *Information structure in standard Arabic verbal sentences* (Doctoral dissertation, University of Wisconsin-Milwaukee).

Alharbi, B. Y. (2017). *The syntax of copular clauses in Arabic* (Doctoral dissertation, University of Wisconsin Milwaukee).

Alqarni, M. (2015). *The morphosyntax of numeral-noun constructions in Modern Standard Arabic* (Doctoral dissertation, University of Florida).

Aoun, J., Benmamoun, E., & Choueiri, L. (2009). *The syntax of Arabic*. Cambridge University Press.

Barker, C. (1992). Group terms in English: Representing groups as atoms. *Journal of Semantics*, *9*(1), 69-93.

Barker, C. (1995). *Possessive descriptions*. Stanford: CSLI Publications.

Barker, C. (1998). Partitives, double genitives and anti-uniqueness. *Natural Language & Linguistic Theory*, *16*(4), 679-717.

Barker, C. (2000). Definite possessives and discourse novelty. *Theoretical Linguistics-Berlin and New york*, 26, 211-228.

Barker, C. (2011). Possessives and relational nouns. In C. Maienborn, K. von Heusinger & P. Portner, (Eds.), *Semantics: An international handbook of natural language meaning* (2ed., pp. 1108-1129). De Gruyter.

Barker, C. (2015). Scope. In S. Lappin & C. Fox (Eds.), *The handbook of contemporary semantic theory* (2ed, pp.40-77).Wiley-Black.

Barwise, J., & Cooper, R. (1981). Generalized Quantifiers and Natural Language. *Linguistics and Philosophy, 4*(2), 159-219.

Beghelli, F. (1997). The syntax of distributivity and pair-list readings. In A. Szabolcsi (Ed.), *Ways of scope taking* (pp. 349-408). Springer.

Beghelli, F., & Stowell, T. (1997). Distributivity and negation: The syntax of each and every. In A. Szabolcsi (Ed.), *Ways of scope taking* (pp. 71-107). Springer.

Benmamoun, E. (1999). The syntax of quantifiers and quantifier float. *Linguistic Inquiry*, *30*(4), 621-642.

Benmamoun, E. (2000). *The feature structure of functional categories: A comparative study of Arabic dialects*. Oxford University Press.

Brisson, C. (1998). *Distributivity, maximality, and floating quantifiers* (Doctoral dissertation, Rutgers University).

Bobaljik, J., & Wurmbrand, S. (2012). Word order and scope: Transparent interfaces and the ¾ signature. *Linguistic Inquiry*, *43*(3), 371-421.

Borer, H. (1996). The construct in review. In J. Lecarme, J. Lowenstamm & U. Shlonsky (Eds.), *Studies in Afroasiatic grammar* (pp. 30-61). Hollands Academic Graphics.

Borer, H. (1999). Deconstructing the construct. In K**.** Johnson**,** & I. Roberts (Eds.), *Beyond principles and parameters*, (pp. 43-89). Springer.

Borer, H. (2009). Compounds: The view from Hebrew. In R. Lieber & P. Štekauer (Eds.), *The Oxford handbook of compounds* (pp.491-511). Oxford University Press.

Brody, M., & Szabolcsi, A. (2003). Overt scope in Hungarian. *Syntax*, *6*(1), 19-51.

Bruening, B. (2001). QR obeys superiority: Frozen scope and ACD. *Linguistic Inquiry*, *32*(2), 233-273.

Carlson, G. (1977), *Reference to kinds in English* (Doctoral dissertation, University of Massachusetts Amherst).

Champollion, L. (2017). *Parts of a whole: Distributivity as a bridge between aspect and measurement*. Oxford University Press.

Charlow, S. (2010). Can DP be a scope island?. In I. Thomas & R. Muskens (Eds.), *Interfaces: Explorations in logic, language and computation* (pp. 1-13). Springer.

Chierchia, G. (1998). Reference to kinds across language. *Natural Language Semantics*, *6*(4), 339-405.

Chierchia, G. (2010). Mass nouns, vagueness and semantic variation. *Synthese*, *174*(1), 99-149.

Chomsky, N. (1976). Conditions on rules of grammar. *Linguistic Analysis* 2, 303–351.

Chomsky, N. (1977). On wh-movement. In P. Culicover, T. Wasow, & A. Akmajian (Eds.), *Formal syntax* (pp. 71-132). Academic Press.

Chomsky, N. (1995). *The minimalist program*. MIT Press.

Chomsky, N. (2000). Minimalist inquiries: The framework. In R. Martin, D. Michaels & J. Uriagereka (Eds.), *Step by step: Essays on minimalism in honor of Lasnik Howard* (pp. 89-155). MIT Press.

Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A Life in Language* (pp. 1-52). MIT Press.

Chomsky, N. (2005). Three factors in language design. *Linguistic Inquiry*, *1*(36), 1- 22.

Chomsky, N. (2015). The minimalist program. MIT Press.

Cooper, R. (1975). *Montague's semantic theory and transformational syntax* (Doctoral dissertation, University of Massachusetts at Amherst).

Christophersen, P. (1939). *The articles: A study of their theory and use in English*. Munksgaard.

Danon, G. (2001). Syntactic definiteness in the grammar of Modern Hebrew. *Linguistics*, *39*(6), 1071-1116.

Danon, G. (2008). Definiteness spreading in the Hebrew construct state. *Lingua, 118*(7)*,* 872-906.

Davidson, D. (1967). The logical form of action sentences. In N. Rescher (Ed.), *The logic of decision and action* (pp.81-95). University of Pittsburgh Press.

Den Dikken, M. (2006). *Relators and linkers: The syntax of predication, predicate inversion, and copulas*. MIT Press.

Diesing, M. (1992). *Indefinites*. MIT press.

Dobrovie-Sorin, C. (2000). Definiteness spread: From Romanian genitives to Hebrew construct state nominals. In V. Motapanyane (Ed.), *Comparative studies in Romanian syntax* (pp. 177-226).Emerald.

Dowty, D. (1987). Collective predicates, distributive predicates, and all. In *Proceedings of the 3rd ESCOL* (pp. 97-115). Ohio State University.

Elbourne, P. (2005). *Situations and individuals*. MIT Press.

Etxeberria, U. (2005). Contextual restriction and quantification in Basque. *Belgian Journal of Linguistics, 19*(1), 211-245.

Etxeberria, U. (2008). On Basque quantification and on how some languages restrict their quantificational domain overtly. In L. Matthewson (Ed.), *Quantification: A cross-linguistic perspective* (pp. 225-277). Emerald Books Publishing.

Etxeberria, U. & Giannakidou A. (2009). Contextual domain restriction and the definite determiner. In F. Recanati, I. Stojanovic, & N. Villanueva (Eds.), *Context-dependence, perspective and relativity* (Mouton Series in Pragmatics 6) (pp. 6–93). De Gruyter Mouton.

Etxeberria, U., & Giannakidou, A. (2019). Definiteness, partitivity, and domain restriction: A fresh look at definite reduplication. In A. Aguilar-Guevara, J. Loyo, & V. Maldonado (Eds.), *Definiteness across language* (Studies in Diversity Linguistics 25) (pp. 419-53). Language Science Press.

Falco, M., & Zamparelli, R. (2019). Partitives and partitivity. *Glossa: A Journal of General Linguistics*, *4*(1). 1-49.

Farkas, D. (1981). Quantifier scope and syntactic islands. In Hendrik et al. (Eds.), *Proceedings of seventeenth Chicago Linguistics Society* (pp. 59-66). Cornell University.

Fehri, A. (1993). *Issues in the structure of Arabic clauses and words*. Springer Science & Business Media.

Fehri, A. (1999). Arabic modifying adjectives and DP structures. *Studia Linguistica, 53*(2), 105-154.

Fehri, A. (2012). *Key features and parameters in Arabic grammar*. John Benjamins Publishing.

Fehri, A. (2018). *Constructing feminine to mean: Gender, number, numeral, and quantifier extensions in Arabic*. Rowman & Littlefield.

Fehri, A. (2020). Hidden trilogies of universal quantifiers: A syntactically based analysis of Arabic *kull* and its kins. *Studia Linguistica*, 74, 427-470.

Fodor, J., & Sag, I. (1982). Referential and quantificational indefinites. *Linguistics and Philosophy*, *5*(3), 355-398.

Francez, I., & Goldring, K. (2012). Quantifiers in modern Hebrew. In E. Keenan, & D. Paperno (Eds.), *Handbook of quantifiers in natural language* (pp. 347-397). Springer.

Frege, G. (1891). Function and concept. In M. Black, & P. Geach (Trans.), *Translations of philosophical writings of Gottlob Frege* (pp. 56-78). Basil Blackwell (1960).

Giannakidou, A. (2004). Domain restriction and the arguments of quantificational determiners. In R. Young (Ed.), *Proceedings of SALT 14* (pp. 110–128). Ithaca.

Gil, D. (1995). Universal quantifiers and distributivity. In E. Bach, E. Jelinek, A. Kratzer, & B. Partee (Eds.), *Quantification in natural languages* (pp. 321-362). Springer.

Glanzberg, M. (2007). Definite descriptions and quantifier scope: Some mates cases reconsidered. *European Journal of Analytic Philosophy*, *3*(2), 133-158.

Hallman, P. (2016). Universal quantification as degree modification in Arabic. *Glossa, 1*(1), 1-43.

Harley, H. (2009) The morphology of nominalizations and the syntax of vP. In A. Giannakidou, & M. Rathert (Eds.), *Quantification, definiteness and nominalization* (pp. 321-343). Oxford University Press.

Heim, I. (1982). *The semantics of definite and indefinite NPs* (Doctoral dissertation, University of Massachusetts Amherst).

Heim, I. (1983). File change semantics and the familiarity theory of definiteness. In J. Gutiérrez-Rexach (Ed.), *Semantics: Critical concepts in linguistics* (pp. 108-135). Psychology.

Heim I., & Kratzer, A. (1998). *Semantics in generative grammar*. Blackwell.

Heller, D. (2002). Possession as a lexical relation: Evidence from the Hebrew Construct State. In L. Mikkelsen, & C. Potts (Eds.), *WCCFL 21 Proceedings* (pp. 127-140). Cascadilla.

Hendriks, H. (1993). Studied flexibility: Categories and types in syntax and semantics (Doctoral dissertation, University of Amsterdam).

Hoeksema, J. (1996). Introduction. In J. Hoeksema (Ed.), *Partitives: Studies on the syntax and semantics of partitive and related constructions* (pp.1-24). Mouton de Gruyter.

Ionin, T. (2001). The one girl who was kissed by every boy: Scope, scrambling and discourse function in Russian. In M. van Koppen et al (Eds.), *Proceedings of ConSole X* (65–80). Student Organization of Linguistics in Europe.

Ionin, T., Matushansky, O., & Ruys, E. (2006). Parts of speech: Toward a unified semantics for partitives. In C. Davis, A. Rose Deal, & Y. Zabbal (Eds.), *Proceedings of the thirty-sixth conference of the North Eastern Linguistics Society*.

Jackendoff, R. (1977). *X' syntax: A sttudy of phrase structure*. MIT Press.

Kamp, H. (1981). A theory of truth and discourse representation. In J. Groenendijk, T. Janssen, & M. Stokhof (Eds.), *Formal methods in the study of language* (pp. 277–322). Mathematisch Centrum.

Karttunen, L. (1969). *Problems of reference in syntax* (Doctoral dissertation, Indiana University, Bloomington).

Karttunen, L. (1976). Discourse referents. In J. McCawley (Ed.), *Syntax and Semantics* (pp.363-85). Academic Press.

Kiss, K. (2002). *The syntax of Hungarian*. Cambridge University Press.

Kiss, K., & Pafel, J. (2017). Quantifier scope ambiguities. In M. Everaert, & H.Van Riemsdijk (Eds.), *The Wiley Blackwell companion to syntax* (pp. 1-36). John Wiley & Sons, Incorporated.

Kratzer, A. (1996). Severing the external argument from its verb. In J. Rooryck, & L. Zaring (Eds.), *Phrase structure and the lexicon* (pp. 109-137). Springer.

Kratzer, A. (1998). Scope or pseudo-scope? Are there wide-scope indefinites?. In S. Rothstein (Ed.), *Events in grammar* (pp.163–196). Kluwer.

Kremers, J. (2003). *The Arabic noun phrase: A minimalist perspective* (Doctoral dissertation, University of Nijmegen).

Krifka, M. (2008). Basic notions of information structure. *Acta Linguistica Hungarica*, *55*(3-4), 243-276.

Ladusaw, W. (1982). Semantic constraints on the English partitive construction. In D. Flickinger, M. Macken & N. Wiegan*, Proceedings of the first west coast conference on Formal Linguistics*. Stanford: Linguistics Department.

Landman, F. (1989). Groups, I. *Linguistics and Philosophy*, *12*(5), 559-605.

Larson, R. (1990). Double objects revisited: Reply to Jackendoff. *Linguistic Inquiry*, *21*(4), 589-632.

Larson, R., & Cho, S. (2003). Temporal adjectives and the structure of possessive DPs. *Natural Language Semantics*, *11*(3), 217-247.

Lewis, D. (1975). Adverb of quantification. In E. Keenan (Ed.), *Formal semantics of natural language* (pp. 3-15). Cambridge University Press.

Lieber, R., & Štekauer, P. (2009). Introduction: status and definition of compounding. In R. Lieber, & P. Štekauer (Eds.), *The Oxford handbook of compounding* (pp. 3-18). Oxford University Press.

Link, G. (1983). The logical analysis of plurals and mass terms: A lattice-theoretical approach. In R. Bäuerle, C. Schwarze, & A. von Stechow (Eds.), *Meaning, use and interpretation of language* (pp. 302-323). de Gruyer.

Link, G. (1984). Hydras. on the logic of relative constructions with multiple heads. In F. Landman, & F. Veltman (Eds.), *Varaities of formal semantics* (pp. 245-257). Foris.

Longobardi, G. (2001). The structure of DPs: Some principles, parameters, and problems. In M. Baltin, & C. Collins (Eds.), *Handbook of syntactic theory* (pp. 562–603). Blackwell.

Mandelbaum, D. (1994). *Syntactic conditions on saturation*, (Doctoral dissertation, University of New York).

Matthewson, L. (2001). Quantification and the nature of crosslinguistic variation. *Natural Language Semantics, 9*(2), 145-189.

May, R. (1977). *The Grammar of quantification*, (Doctoral dissertation, Massachusetts Institute of Technology).

May, R. (1985). *Logical form: Its structure and derivation*. MIT Press.

May, R., & Bale, A. (2017). Inverse linking. *The Wiley Blackwell companion to syntax* (2ed, pp.1-29). John Wiley & Sons, Incorporated.

Mikkelsen, L. (2005). *Copular clauses: Specificational, predicational and equation*. John Benjamins.

Milsark, G. (1976). Toward an explanation of certain peculiarities of the existential construction in English. *Linguistic Analysis,* 3, 1-29.

Mohammad, M. (1988). On the parallelism between IP and DP. In *Proceedings of WCCFL* (7), 241-254.

Montague, R. 1973. The Proper treatment of quantification in ordinary English. In J. Hintikka, J. Moravcsik, & P. Suppes (Eds.), *Approaches to natural language*. Reidel.

Moutaouakil, A. (1989). *Pragmatic functions in a functional grammar of Arabic*. Walter de Gruyter GmbH & Co KG.

Munn, A. (1995). The possessor that stayed close to home. In V. Samiian and J. Schaeffer (Eds.), Proceedings of the Western Conference on Linguistics (WECOL) (pp.181-195).

Nichols J., & Bickel B. (2013a). Possessive classification. In M. Dryer & M. Haspelmath (Eds.), The World Atlas of Language Structures Online.

Nichols, J., & Bickel, B. (2013b). Obligatory possessive inflection. In M. Dryer, & M. Haspelmath (Eds.), *The World Atlas of Language Structures Online*.

Ouhalla, J. (1996). Remarks on the binding properties of wh-pronouns. *Linguistic Inquiry*, 676-707.

Ouhalla, J. (2011). Preposition-possessum agreement and predication in possessive noun phrases. *Brill's Journal of Afroasiatic Languages and Linguistics*, *3*(1), 111-139.

Ouwayda, S. (2012). Construct state nominals as semantic predicates. In R. Bassiouney, & E. Katz (Eds.), *Arabic language and linguistics* (pp.79-98). Georgetown University Press.

Ouwayda, S. (2014). *Where number lies: Plural marking, numerals, and the collective-distributive distinction* (Doctoral dissertation, University of Southern California).

Parsons, T. (1990). *Events in the semantics of English*. MIT Press.

Partee, B. (1987). Noun phrase interpretation and type-shifting principles. In J. Groenendijk, D. Jongh, & M. Stokhof (Eds.), *Studies in discourse representation theory and the theory of generalized quantifiers* (pp.115–43). Foris.

Partee, B. (1995). Quantificational structures and compositionality. In E. Bach, E. Jelinek, A. Kratzer, & B. Partee (Eds.), *Quantification in natural languages* (pp.541–601). Kluwer.

Partee, B. (2008). *Compositionality in formal semantics: Selected papers by Barbara H. Partee*. John Wiley & Sons.

Partee, B., & Borschev, V. (1998). Integrating lexical and formal sematics: Genitives, relational nouns, and type-shifting. In R. Cooper, & T. Gamkrelidze (Eds.), *Proceedings of the second Tbilisi symposium on language, logic, and computation* (pp. 229-241). Center on Language, Logic, Speech, Tbilisi State University.

Partee, B. and Rooth, M. (1983). Generalized conjunction and type ambiguity. In R. Bauerle, C. Schwarze, & A. von Stechow (Eds.), *Use and interpretation of Language*. De Gruyter.

Pesetsky, D., & Torrego, E. (2007). The syntax of valuation and the interpretability of features. In S. Karimi, V. Samiian & W. Wilkins (Eds.), *Phrasal and clausal architecture: Syntactic derivation and interpretation* (pp. 262-294). John Benjamins.

Recanati, F. (1996). Domains of discourse. *Linguistics and Philosophy*, *19*(5), 445-475.

Reinhart, T. (1981). Pragmatics and linguistics: An analysis of sentence topics in pragmatics and philosophy I. *Philosophical and Studia Philosophica Gandensia Gent*, *27*(1), 53-94.

Reinhart, T. (1997). Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy*, *20*(4), 335-397.

Ritter, E. (1988). A head-movement approach to construct-state noun phrases. *Linguistics*, *26*(6), 909-930.

Ritter, E. (1991). Two functional categories in noun phrases. *Syntax and semantics*, 25, 37-62.

Rizzi, L. (1997). The fine structure of the left periphery. In L. Haegeman (Ed.)**,** *Elements of grammar* (pp. 281-337). Kluwer.

Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics*, *1*(1), 75-116.

Roy, I. (2013). *Nonverbal predication: Copular sentences at the syntax-semantics interface*. Oxford University Press.

Russell, B. (1905). On denoting. *Mind*, *14*(56), 479-493.

Ruys, E. (1992). The scope of indefinites (Doctoral dissertation, Utrecht University).

Sauerland, U. (2005). DP is not a scope island. *Linguistic Inquiry*, *36*(2), 303-314.

Sauerland, U., & Yatsushiro, K. (2004). Genitive quantifiers in Japanese as reverse partitives. *Ms. ZAS, Berlin*.

Schwarz, F. (2009). *Two types of definites in natural language* (Doctoral dissertation, University of Massachusetts Amherst).

Schwarzschild, R. (1996). *Pluralities* (Vol. 61). Springer Science & Business Media.

Selkirk, E. (1977). Some remarks on noun phrase structure. In P. Culicover, T. Wasow, and A. Akmajian (Eds.), *Formal syntax* (pp.285–316). Academic Press.

Shlonsky, U. (1991). Quantifiers as functional heads: A study of quantifier float in Hebrew. *Lingua*, *84*(2-3), 159-180.

Shlonsky, U. (2004). The form of Semitic noun phrases. *Lingua*, *114*(12), 1465-1526.

Siloni, T. (1997*). Noun phrases and nominalizations: The syntax of DPs*. Springer.

Soltan, U. (2007). *On formal feature licensing in minimalism: Aspects of Standard Arabic morphosyntax* (Doctoral dissertation, The University of Maryland, College Park).

Stanley, J. (2002). Nominal restriction. In G. Peter, & G. Preyer (Eds.), *Logical form and language* (pp. 365-388). Oxford University Press.

Stanley, J., & Szabó, Z. (2000). On quantifier domain restriction. *Mind & Language*, *15*(2-3), 219-261.

Stickney, H. (2007). Investigations into children's acquisition of the partitive structure. *Nordlyd: Tromsø Working Papers on Language and Linguistics: Proceedings from Workshop on Language Acquisition, SCL 22*, 34 (3), 172-186.

Storto, G. (2003a). *Possessives in context: Issues in the semantics of possessive constructions* (Doctoral dissertation, University of California, Los Angeles).

Storto, G. (2003b).On the status of the partitive determiner in Italian. In J. Quer, J. Schroten, M. Scorretti, P. Sleeman, & E. Verheugd-Daatzelaar (Eds.), *Romance languages and linguistic theory 2001* (pp. 315-330). John Benjamins.

Strauss, U. (2004). Individual-denoting and property-denoting possessives". In J. Kim, Y. Lander & B. Partee (Eds.), *Possessives and beyond: Semantics and syntax* (pp.183-198). GLSA Publications Amherst.

Strawson, P. (1950). On referring. *Mind*, *59*(235), 320-344.

Szabolcsi, A. (1994). The noun phrase. In F. Kiefer, & K. Kiss (Eds.), *Syntax and semantics: The syntactic structure of Hungarian 27* (pp.179–274). Academic Press.

Szabolcsi, A. (Ed.). (1997a). *Ways of scope taking*. Springer.

Szabolcsi, A. (1997b). Strategies for scope taking. In A. Szabolcsi (Ed.), *Ways of scope taking* (pp. 109-154). Springer.

Szabolcsi, A. (1997c). Quantifiers in pair-list readings. In A. Szabolcsi (Ed.), *Ways of scope taking* (pp. 311-342). Springer

Szabolcsi, A. (2010). *Quantification*. Cambridge University Press

Taylor, J. (1989). Possessive genitives in English. *Linguistics*, *27*(4), 663-686.

Vikner, C., & Jensen, P. (2002). A semantic analysis of the English genitive interaction of lexical and formal semantics. *Studia Linguistica*, *56*(2), 191-226.

von Fintel, K. (1994). *Restrictions on quantifier domains* (Doctoral dissertation, University of Massachusetts, Amherst).

von Fintel, K. (1997). Bare plurals, bare conditionals, and only. *Journal of Semantics*, *14*(1), 1-56.

von Fintel, K. (2004). Would you believe it? The King of France is back! Presuppositions and truth-value intuitions. In A. Bezuidenhout, & M. Reimer (Eds.), *Descriptions and beyond* (pp. 315-341). Oxford University Press.

Westerstahl, D. (1984). Determiners and context sets. In J. van Benthem, & A. Meulen (Eds.), *Generalized quantifiers in natural language* (pp. 45-71). Foris.

Winter, Y. (1997). Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy*, *20*(4), 399-467.

Wintner, S. (2000). Definiteness in the Hebrew noun phrase. *Journal of Linguistics, 36*(2), 319-363.

Zamparelli, R. (2000). Layers in the determiner phrase (Doctoral Dissertation, University of Rochester).

Zamparelli, R. (2002). Definite and bare kind-denoting noun Phrases. In C. Beyssade, R. Bok-Bennema, F. Drijkoningen, & P. Monachesi (Eds.), *Romance languages and linguistic theory 2000* (pp. 305-343). John Benjamins.

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