PRO vs pro in Arabic Syntax: Theoretical Analysis

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Abstract—The objective of this work is to investigate the syntactic and semantic properties of the empty categories PRO and pro in Modern Standard Arabic syntax. The problem: both of them are always syntactically covert at PF; semantically, though PRO bears same / or different theta roles from its anaphor at spell out, it leads to correct interpretation at LF; however, pro bears different theta roles that determine correct c-selection at spell out and lead to correct interpretations at LF. Conclusions: Syntactically PRO occupies, merely, the subject position of non-finite phrases; it does not check the nominative case since the phrases lack [Agrs, T]. However, pro occupies the subject position of finite clauses in (i) independent clause, (ii) embedding, (iii) subordinate and (iv) independent clauses related to weather (expletive) verbs; it checks the nominative case by [Agrs, T]. Semantically, PRO checks, merely, the theta roles of agent and experiencer; however, pro checks the theta roles of agent, patient, experiencer, theme, instrument and location and.

Index Terms—PRO, pro, nominative case, theta role, interpretation

I. INTRODUCTION

Arabic is a pro – drop – language in which there are various types of pronouns that have the structure of a noun phrase. They are classified into three types, namely, (i) the overt attached personal pronouns, (ii) non-attached overt personal pronouns and (iii) the covert personal pronouns. (i) and (ii) are not included in this analysis; however, the focus of the analysis is on the third category in which the empty categories PRO and pro occur. PRO occupies the subject position of infinitival, gerundival phrases and small clauses; it is posited at spell out in an attempt to capture the relevant intuition of reference in the interpretation process at LF. It is claimed that the implicit subject becomes explicit if the relevant clauses are paraphrased by finite clauses. PRO creates multiple confusions in the interpretations of the structures in which it occurs. This is due to the syntactic fact that PRO has different referents at all levels of syntax. Thus, the control theory was proposed as a module of grammar to account for its syntactic distribution and semantic interpretations at spell-out and LF. Infinital clauses, in Arabic, are introduced by the infinitive marker ?an ‘to’ as in [ ?aawala zaidun , ?an PRO, yadrusa ‘Zaid tried [ PRO to study’]. However, gerundival clauses are of three types, namely, (i) subject gerund as in [ al-sibaadiyat PRO mufidatan ‘PRO swimming is good’], (ii) gerund after a verb as in [ ?tadhakkartu pro mughaadarta PRO al-manzili ‘I remember PRO leaving the house’] and (iii) gerund after a preposition as in [ yahtammu PRO zaidun , fi al-sibaadiyat ‘Zaid is interested in PRO swimming’]. At last small clauses are represented in the specimen [ wasala zaidun , PRO , ghadaamun ‘Zaid arrived PRO angry’]. However, pro occupies, merely, the subject position of finite clauses whether main, embedding or subordinate clauses; it is overt at spell out but covert at LF / PF. This element satisfies the EPP in that a clause without a subject is ungrammatical whether the subject is overt or covert; pro occurs in a sentence if the verb is in the imperfective form as in [ ?uuwaafigu pro ‘ala qaraarka ‘I agree with your decision.’], in the perfective as in [ rajta’ at pro bi khufai ymun ‘She came back with the two shoes of Hunain’] and in the imperative as in [ ?uktub pro al- risaalata ‘Write the letter!’ (cf., Alghalayini, p. 80 for the examples only in Arabic). As Arabic is rich in agreement markers, it occurs in all types of tenses in Arabic syntax.

II. STATEMENT OF THE PROBLEM

The problem of this study is that both of them are always syntactically covert at PF; as they occur in complementary distribution, they succumb to different syntactic features in syntax; semantically, though PRO bears same / or different theta roles from its anaphor at spell out, it imposes correct interpretation at LF; pro has various theta roles that determine correct c-selection at spell out and lead to correct semantic interpretations at LF. Such problematic issues need to be explicated in this work in a theoretical manner.

III. OBJECTIVES AND QUESTIONS OF THE STUDY

The objective of this study is to check the syntactic as well as the semantics properties of PRO and pro in Arabic syntax. For such reasons, the researcher proposed the following questions: (1). What are the syntactic positions in which they occur? And (2). What are their theta roles?
IV. SIGNIFICANCE OF THE STUDY

This study is significant in a number of issues. Firstly, it shows that though PRO and pro are covert subjects, they play significant roles in syntax and in the interpretation of the sentences at LF. Secondly, control relation established between PRO and its anaphors determines correct semantic interpretation at LF. In fact, this relation is inactive with pro. Thirdly, PRO position cannot be filled by either a trace or pro because it has the categorical features of [- Agr]. This study is also significant as it helps learners of Arabic understand and interpret both sentences in which PRO and pro occur in a better manner. It also helps translators go deep into the language structure to give better version of Arabic translation into other languages. The researcher thinks also that this study will encourage other scholars to follow the current theoretical views referred to, in this work, in an attempt to explain both categories in other pro-drop-languages or non-drop languages and contrasted them to Arabic.

V. THEORETICAL PERSPECTIVES

Rizzi (1986) proposed that in pro-drop-languages, pro occurs in the subject position of a finite clause for two main syntactic requirements, namely, (i) it is licensed under head government of INFL as the head and (ii) the syntactic content of the empty category pro is recovered through rich agreement features available in the structure as in Italian [pro, parlo,] in which the identification of the subject features through [Agr] is represented by co-indexation. Borer (1980, 1983 and 1986) explicated that, in Modern Hebrew, the subject pro can be dropped as in [Hu `axalti `et ha-tapu`ax `I ate the apple]. This kind of occurrence is very restricted to main clauses with future and past tenses in which pro must be first and second persons; however, it is not allowed in the present tense at all. He related pro-drop option in Modern Hebrew to richness of inflection. In the present tense sentences, only gender and number are overtly realized; whereas, in other tenses, third person is unmarked; thus, he generalized that not all types of inflections are strong enough to allow pro-drop in Hebrew (cf., 1986, p.392). Huang (1984) argued that Chinese allows pro to be dropped, in spite of the fact that, it lacks [Agr] entirely. His assumption is formulated to argue that pro is possible either in languages with rich agreement or no agreement at all as in Japanese and Korean. This issue confirmed by Platzacl (1987) in the sense that though Scandinavian languages lack overt [Agr], still pro is dropped and they are non-pro-drop-languages. Hyams (1986) argued that the empty category pro, in pro-drop-languages, acts as the lexical pronouns in receiving case and theta roles. In the embedded tensed clause in pro-drop-languages, (AGR) absorbs the normal features of the subject i.e. case and theta role. Hageman (1994) argued that pro in Italian is originated at D-structure in [Spec, VP] position to be assigned its external theta role then it moves to [Spec, IP] where it will be licensed and identified via the rich INFL”. Chomsky (1986) argued that pro is a universal issue by which languages are divided into pro-drop languages and non-pro-drop languages. It occurs as the covert subject of a finite clause with the categorical feature [-anaphor, + pronominal]; it satisfies the EPP in syntax and gets the nominative case by collection of [Agr, T]. The strong inflectional system in pro-drop-languages allows AGR to recover the entity of the null subject by the agreement features which appear on the verb. The co-indexation between AGR and the null subject pro is very important to satisfy the recoverability of its content. With regard to the requirement of case and theta theories, pro must receive both case and theta role at spell out (p. 136). It is argued that infinitive, gerundival form of the verb and adjectives are not case assignors. Chomsky (1995) argued that PRO occurs as the subject of a non-finite clause. Thus, it does not assign the nominative case. The theory of control as a module of grammar accounts for its syntactic distribution and the semantic interpretations at spell-out and LF. Normally, the subject position of the non-finite clauses is filled by PRO whenever this position is not occupied by an overt N’. This PRO is syntactically active; it has a theta role but not case as compared to an overt N’ occurring at the finite clause. Its interpretation at spell-out is regulated by the type of the controller N’ retained at LF (p. 33-50 and (83-85)). Chomsky (1995) also argued that PRO must be controlled wherever it occurs; it can be controlled by its subject as in [Mary expected [PRO, to hurt herself]] in which ‘Mary’ is the controller or by its object as in [John believed [PRO, to be sick]] in which ‘Bill’ but not ‘John’ is the controller. PRO can be arbitrary controlled in interpretation as in [It is common [PRO to hurt herself]] in which the controller is an implicit argument and interpreted to refer to ‘one’. It is proved that PRO has the categorical feature [+ anaphor, + pronominal] which means that it must have an antecedent to refer to as that of anaphors or it functions as a pronoun as it has arbitrary kind of reference as in [John asked [how [PRO to behave himself/ or oneself]] in which PRO is either controlled by the subject ‘John’ or by ‘anyone’ (p. 36-41). However, pro lacks control relation in syntax. In short, the above the theoretical views will be referred to for this analysis.

VI. DISCUSSIONS AND RESULTS

A. Syntactic Positions of PRO and pro in Arabic Syntax

Non-finite clauses are (i) infinitival clauses, (ii) gerundival clauses and (ii) small clauses; they are nominal in nature; thus, they occupy the syntactic positions (i) subject, (ii) object complement and (iii) subject complement in Arabic syntax. PRO occurs in the subject position of these clauses; its syntactic properties are determined by the controller at LF in the upper clause. However, finite clauses show tense in which pro occurs as the subject of these
It is illustrated by the \[Agr\] t, 3\textsuperscript{rd}, sg. masc. leave subj. det garden

‘Zaid tried to leave the garden.’

In (1), PRO initiates the infinitival phrase \[?an yaghadira al-hadiqata ‘to leave the garden’\]. It is controlled by the anaphor subject \[zaidun ‘Zaid’\] of the matrix clause. It does not check the nominative case because \[?an ‘to’\] is not case assigner and lacks [T]. The entity pro cannot occur in this position because it is a caseless position.

In (2), PRO initiates the gerundival phrase \[fuqdaana fuluusi-hi ‘losing his money’\]. It is controlled by the anaphor subject \[’amrunn ‘Amr’\] of the matrix phrase. It does not check a case because the nominal form of the verb \[yafqida ‘lose’\] is not case assigner and the clause lacks both [Agr and T]. The empty category pro cannot occur in this position because it cannot check the nominative case.

In (3), PRO initiates the small phrase \[maaṭirun ‘rainy’\]. It is controlled by the anaphor subject \[al-ṭaqsu ‘the weather’\] of the matrix clause. It does not check a case because the predicative adjective \[maaṭirun ‘rainy’\] is not case assigner and the clause lacks the agreement features [Agr and T]. The entity pro cannot occur in this position because it is a caseless position. In short, infinitive, gerundive and predicative adjectives are not case assignors in Arabic syntax. Thus, pro cannot initiate such clauses.

However, the subject pro initiates the independent clause in (4).

In (4), pro ‘I’ initiates the independent phrase \[?uḥibu al-‘ilmā ‘I love knowledge’\]. Syntactically, it is understood as the first person singular feminine or masculine which can be represented by D’ \[?una ‘I’\]; it is recovered by the agreement marker \[?u\]. It checks the nominative case by the zero tense marker \[u\]. The entity PRO cannot occur in this position because it is a case position. Other possible pro(s) can occur in this position and have the same syntactic features of case and [Agr] but with different [Agr] as in nu (agr)-ḥibu ‘we love’, [tu (agr) - ḥibu ‘she loves’], [yu (agr) - ḥibu ‘he / they loves / love’], [tu (agr) - ḥiba ‘they both feminine love’], [yu (agr) - ḥiba ‘they both masculine love’] and [yu – (agr) ḥiba ‘you love’] and [yu – (agr) ḥiba ‘you (masculine) love’] and [yu – (agr) ḥiba ‘you (feminine) love’].

In (5), the entity pro initiates the embedding phrase \[?anṭanah ‘pass’\]. It is illustrated by the [Agr] [ya, 3\textsuperscript{rd}, sg masc.]; it checks the nominative case by the case assignor [a] attached to the verb \[njiḥ ‘pass’\]. The category PRO cannot occur in this position due to both [Agr and T].

In (6), the entity pro initiates the subordinate clause \[?indama dakhala ‘when he entered’\]. It is illustrated by the [Agr] [0, 3\textsuperscript{rd}, sg masc.]; it checks the nominative case by the case assignor [a] attached to the verb dakhal ‘entered’. The category PRO cannot occur in this position because of the case assignors [Agr and T].

In (7), the entity pro initiates the independent clause related to weather \[?amṭar al- baarihata ‘it rained yesterday’\]. It is illustrated by the [Agr] t, 3\textsuperscript{rd}, sg fem.; it checks the nominative case by the case assignor [a] attached to the verb \[?amṭar ‘rained’\]. The category PRO cannot occur in this position due to both [Agr and T]. In short, pro checks
the nominative case by [T or INFL] as it is rich in both [Agr and T]. However, PRO cannot occupy this position as it is case oriented.

B. Semantic Interpretations Analysis of PRO and pro in Arabic Syntax

The relation between the predicate and its subject is not studied only from a syntactic point of view but also from a semantic view. This semantic relation is the basic for the correct understanding and interpretation of the sentence at LF; it is accounted for by theta theory. It was evident that every argument must be assigned a theta role in a theta position and each theta role must be assigned to only one argument (theta criterion). The subcategorization of the predicate decides its thematic relations in its theta grid for correct semantic interpretation at LF. Thus, it is [\textit{V"}] that assigns the external theta role of the subjects PRO and pro. The researcher tries to find out what possible theta roles that can be assigned to both of them in the subject positions in Arabic syntax. In an attempt to analyze question (2) of the study, the examples below illustrate the issue.

**PF**

8. \([\text{T}^1] \ ?\text{arada} \quad \text{PRO}, \quad [\text{T}^2] \ ?\text{an} \quad \text{yaktuba} \quad \text{PRO}, \quad \text{darsa} - \quad \text{hu} \ ].

\[\text{He wanted to write his lesson.}\]

In (8), PRO checks the theta role of agent by [\textit{V"}] \textit{yaktuba darsahu} ‘write his lesson’ as it wills the action of writing his lesson. Though PRO has a duplicated theta role of agent as that of pro ‘he’, it is interpreted as pro ‘he’ that can do the action of wanting in the main clause and the act of writing in the embedded phrase due to subject obligatory kind of control. In other words, the subject pro performs one of the semantic functions simultaneously one of the matrix (ie. pro) and the other of the infinitival phrase (i.e. PRO).

**PF**

9. \([\text{T}^1] \ ?\text{wa\text{"}alada} \quad \text{pro}, \quad [\text{T}^2] \ ?\text{an} \quad \text{yaktuba} \quad \text{PRO}, \quad \text{ghadbaan}. \ ].

\[\text{Zaid arrived angry}\]

In (9), PRO checks the theta role of experiencer by [\textit{A"}] \textit{ghadbaan} ‘angry’ as PRO experiences the feeling of being angry. Though PRO has a different theta role from \textit{za\text{"}idun} ‘Zaid’ of the matrix clause (i.e. agent), it is interpreted as \textit{za\text{"}idun} ‘Zaid’ that experiences anger in the main clause due to subject obligatory kind of control. In other words, the subject \textit{pro} performs two different semantic functions simultaneously. \textit{Zaidun} has the theta role of agent in the main clause and experiencer in the adjectival embedded phrase.

However, \textit{pro may} have the following theta roles.

**PF**

10. \([\text{T}^1] \ ?\text{jalasa} - \quad \text{pro}, \quad \text{ba\text{"}da} \quad \text{al}\quad \text{ghuruubi}. \ ]

\[\text{He sat after the sunset.}\]

In (10), pro ‘he’ checks the theta role of agent by [\textit{V"}] \textit{jalasa ba\text{"}da al- ghuruubi} ‘sat after the sunset’ as pro wills the action of sitting. There are other Arabic [\textit{V"}]s that check the agent theta role to the subject position, namely, \textit{sa\text{"}abah} ‘swam’, \textit{sarakha} ‘cried’, \textit{rak\text{"}ada} ‘ran’ \ldots etc. (cf., Jalabneh, 2007, p. 60 - 65) and \textit{daraba} ‘hit’ (cf., Carnie, 2002, p. 168).

**PF**

11. \([\text{T}^1] \ ?\text{maa\text{"}a} - \quad \text{pro}, \quad \text{fi} \quad \text{al}\quad \text{manzili}. \ ]

\[\text{He died in the house.}\]

In (11), pro ‘he’ checks the theta role of patient by [\textit{V"}] \textit{maa\text{"}a fi al-manzili} ‘died in the house’ as pro undergoes the action of death. There are other [\textit{V"}]s that belong to the same group, namely, \textit{dhahaba} ‘went’, \textit{wa\text{"}ala} ‘arrived’ and \textit{\text{"}ikhtaf\text{"}a} ‘disappeared’. The subject pro can check the theta role of experiencer as in (12).

**PF**

12. \([\text{T}^1] \ ?\text{abaa} - \quad \text{pro}, \quad \text{hu}. \ ]

\[\text{He loved his father.}\]

In (12), pro ‘he’ checks the theta role of experiencer since it is the argument that experiences love (cf., Carnie, 2002, p. 177 for experiencer). There are other [\textit{V"}]s that check this theta role, namely, \textit{kariha} ‘hated’, \textit{sa\text{"}ala} ‘coughed’, \textit{\text{"}ayasa} ‘sneezed’, \textit{tanahhada} ‘sighed’ and \textit{marida} ‘felt sick’. (cf., Jalabneh, 2007, p. 69 - 72).

**PF**

13. \([\text{T}^1] \ ?\text{tadahara} - \quad \text{pro}. \ ]

\[\text{The ball rolled.}\]

In (13), pro ‘it’ checks the theta role of theme since it is the argument that undergoes the action of rolling. It is interpreted as al-\textit{kurutu} ‘the ball’ in Arabic syntax.

14. \([\text{T}^1] \ ?\text{taha\text{"}ama} - \quad \text{pro}. \ ]

\[\text{It crashed.}\]
In (14), pro ‘it’ checks the theta role of instrument since it is the instrument that has been crashed (i.e. al-ţaa?iratu ‘the plane’ as a specimen of the theta role interpretation for this pro in Arabic syntax.

15. [T" tadamara- pro destroyed 3rd, sg, fem it, location ‘It destroyed.’

In (15), pro ‘it’ checks the theta role of location since it is the place that has been destroyed (i.e. al-madiinatu ‘the city’ as a specimen of the theta role interpretation for this pro in Arabic syntax. In short, pro in Arabic syntax can check the theta roles of agent, patient, experiencer, theme, instrument and location. Theta roles help us understand the correct interpretation of pro at LF.

To sum up, syntactically, PRO occurs only in the subject position of non-finite clauses and cannot assign the nominative case since the clauses lack [T, Agr] features; however, pro occurs in the subject of finite clauses of all types and is assigned the nominative case by them. Semantically, PRO assigns only the theta roles of agent and experiencer; whereas, pro assigns the theta roles of agent, patient, experiencer, theme, instrument and location.

VII. CONCLUSIONS

The study concludes that syntactically PRO occupies merely the subject position of infinitival phrases in (1), gerundival phrases in (2) and small phrases in (3). Syntactically, it does not check the nominative case since the phrases lack [Agrs and T] as case assignors. However, pro occupies the subject position of finite clauses in the independent clause in (4), embedding in (5), subordinate in (6) and in independent clauses related to weather (expletive) in (7). The category pro checks the nominative case by the collection of [Agrs and T] as it occupies a structural case position. Insofar as the semantic interpretation is concerned, PRO checks the theta role of agent in (8) and experiencer in (9). However, pro checks the theta roles of agent in (10), patient in (11), experiencer in (12), theme in (13), instrument in (14) and location in (15). Though semantically theta roles have [-interpretable] features at spell out, they determine the exact version of interpretation at LF. This issue was elaborated amply in the analysis in the sense that the empty category PRO bears same / or different theta role from the matrix one; thus, this new theta role leads to correct semantic interpretation done by the anaphor of the matrix clause. With regard to pro, its theta role delimits the subcategorization selection of the verb which leads to correct semantic selection at LF. In other words, the verb satisfies both c-selection as well as s-selection simultaneously.

APPENDIX I. TRANSLITERATION SYMBOLS OF THE ARABIC PHONEMES OF CONSONANTS

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Notice: the researcher has a reference to the transliteration symbols while writing the Arabic phonemic segments in the text (c.f. Jalabneh, 2007)
APPENDIX II. TRANSLITERATION SYMBOLS OF THE ARABIC PHONEMES OF VOWELS

Notice: [iː/i] is a tense vowel while [i] is lax and the same is applied to the rest of vowels in Arabic phonology. (cf., Fari, et al., 2006, p. 74)

APPENDIX III. ABBREVIATIONS

Agr / Agrs: Agreement subject
Agrs: Agreement
D": Noun phrase
Det: Determiner
D" : Determiner phrase
e : Empty
I": Inflectional phrase
INFL / I: Inflection
LF : Logical form
Masc. : Masculine
Sg.: Singular
subj: Subjunctive
T": tense phrase
T: tense
V": Verb phrase
V: Verb

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