TRACNG THE ORIGIN OF PRO THROUGH EQUI NP DELETION

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Abstract

This study examines the syntactic development of the null subject of infinitival clauses known as PRO, through the transformational process of Equi NP Deletion. Its emergence was traced by analysing data from four languages and exploring its relationship with control structures and infinitival clauses. The data for the study were sourced both primarily and secondarily from five languages - English, Spanish, Italian, Portuguese and Goemai. Responses from native speakers using the purposive sampling technique of the non-probability sampling method and sentences from textbooks and journal articles were used as data for the research. The research reveals that Equi NP Deletion, and the Extended Projection Principle are crucial in the formation, distribution, referencing and interpretation of PRO. The study acknowledges the existence of PRO in some Nigerian languages, especially Goemai. PRO in Goemai can be controlled by the subject of a matrix, object of a matrix clause, and can be arbitrarily controlled. Tracing the development of PRO through Equi NP Deletions shows the dynamic nature of linguistic theory and demonstrates the importance of revisiting and reevaluating concepts in linguistics to simplify some complexities in the study of language.

Keywords: Control Theory, Equi NP Deletion, Infinitival constructions, PRO.

Introduction

The debate about the origin of the phonetically null pronoun (PRO) or "Big PRO", as sometimes it is being called, has been the

subject of discussion by linguists, especially syntacticians. PRO occurs in infinitival constructions. It is a topic of interest, especially when looking at the concept of the Extended Projection Principle. One rule that scholars look at when tracing the origin of PRO is the rule of Equi NP Deletion, which deletes identical noun (phrase) in infinitival constructions. The concept of Equi NP Deletions has been studied and applied cross linguistically.

The number of research that have been conducted on the origin of PRO have not availed scholars of its true origin. Some scholars are of the view that PRO is a universal element language, while others are of the opinion that it originated because of language change. Others argue that its origin can be linked to raising constructions. This study aims to contribute to the ongoing discussion by tracing the origin of PRO using Equi NP Deletion. By analysing sentences and trying to establish the relation between the two (concepts), the study also tries to establish the fact that a concept can be an offshoot of another by analysing the historical development.

Methodology

The data used for the paper were sourced through primary and secondary sources. For the primary data, responses from native speakers – of Goemai, an Afroasiatic language spoken in Plateau State, North-Central Nigeria, were used using the purposive sampling technique of the non-probability sampling method. A questionnaire was used to elicit information from the respondents which was transcribed using a broad phonemic transcription. For the secondary data, Textbooks and journal articles were used to source the data for the research.

Equi NP Deletion

Crystal (2008, p. 172) defines Equi NP deletion as "a rule in classical transformational grammar, usually abbreviated to Equi, which deletes a subject noun phrase from a complement clause in a sentence

when it is co-referential with another noun phrase in the main clause of the same sentence." Larson et al (1992) and Landau (2013) claim that the work of Rosenbaum (1967) in generative grammar gave rise to identity erasure transformation, which later was renamed Equi NP Deletion (Equi for short).

Akmajian and Heny (1975) explain the different stages of Equi NP deletion by applying the rules of Equi NP Deletion and *for* Deletion. For example:

1. a. I would hate to find the house empty.
   b. We would prefer to leave the room now.:
   c. Sam wants (very much) to go to college.
   (Akmajian & Heny, 1975, p. 298)

The underlined complements are examples of infinitival clause. The infinitival clauses have no overt subject and may be called reduced complements (Akmajian & Heny, 1975, p. 298). The clauses, however, can be interpreted to have subjects like in (2) below:

2. a. I would hate it if I found the house empty.
   b. We would prefer it if we left the room now.
   c. Sam would (very much) like it if he (i.e., Sam) went to college.
   (Akmajian &Heny, 1975, p. 298)

In examples (2a-c), it seems that the reduced complements in (1a-c) have the subjects *I* in (2a), *we* in (2b) and *he* in (2c), and they all co-refer to the subject of their matrix clauses.

There are instances where infinitival for-to clauses are unacceptable, as illustrated below:

(3) a. I would hate for John to find the house empty.
   b. *I would hate for me to find the house empty.

(4) a. We would prefer for you to leave the room now.
b. *We would prefer for us to leave the room now.
(5) a. Sam wants (very much) for his daughter to go to college.
b. *Sam wants (very much) for { him / Sam } to go to college.
(Akmajian & Heny, 1975, p. 299)

In the above examples (3b), (4b) and (5b) are ungrammatical because the NPs that come between *for* and to *co-refer* with the matrix subject in the sentences they occur, hence, the ungrammaticality.

According to Akmajian and Heny (1975, p. 300), one way to account for the facts in (3)-(5) is to use a rule called Equi NP Deletion, which obligatorily deletes NPs that come between for and to and co-refers with subject of matrix clause of the sentences in which they occur. For example:

(6) a. I would hate for me to find the house empty.
Equi NP Deletion
b. I would hate for — to find the house empty.
(7) a. We would prefer for us to leave the room now.
Equi NP Deletion
b. We would prefer for — to leave the room now.
(8) a. Sam wants very much for Sam to go to college.
Equi NP Deletion
b. Sam wants very much for — to go to college.
(Akmajian & Heny, 1975, p. 300)

Examples (6b), (7b) and (8b) are transforms of (6a), (7a) and (8a) after the rule of Equi NP deletion was applied. The deleted NPs co-refer with the subject of matrix clause in the sentences.

Another rule applies after the Equi NP deletion i.e., *for Deletion*, which obligatorily deletes for when it is directly adjacent to *to*. For example, (6b) will then be (9):

(9) a. I would hate <u>for</u> ____ to find the house empty.

For Deletion

(b) I would hate _ _ to find the house empty.

'I would hate to find the house empty.'

(Akmajian & Heny, 1975, p. 300) Example

Example (9b) is the transform of (9a) after the rule of *for Deletion* was applied.

The study of Equi NP Deletion has been carried out cross-linguistically. For instance, Jaeggli (1982), Rizzi (1982), and Cinque (1983) note instances of Equi NP Deletion in Spanish, Italian, and Portuguese. Consider the following:

(10a)	Juan	trató	Juan	de	salir	
(b)	Juan	trató	[ ]	de	salir	
	Juan	try	[ ]		INF	leave

"Juan tried to leave"

Adapted from Jaeggli (1982).

(11a)	Gianni	ha tentato	Gianni			di	cantare
(b)	Gianni	ha	tentato	[	]	di	cantare
	Gianni	Tns.Marker	try	[	]	INF	sing

"Gianni tried to sing"

Adapted from Rizzi (1982).

(12a)	O	João	tentou	O	Joao	a	cantar
(b)	O	João	tentou	[	]	a	cantar
	Det.	João	try	[	]	INF	sing

"Joao tried to sing"
Adapted from Cinque (1983).

Sentences (10, 11 & 12) are instances of Equi NP Deletion. In (10), the subject *Juan* of the infinitival clause "de salir" (to leave) was deleted because it refers to the preceding subject *Juan* of the matrix clause. In (11), the subject G*ianni* of the infinitival clause "di cantare" (to sing) was deleted because it refers to the preceding subject G*ianni* of the matrix clause. Similarly, in (12), the subject *O João* (the João) of the infinitival clause "a cantar" (to sing) was deleted because it refers to the preceding subject *O João* (the João) of the matrix clause.
To explain further, Larson et al (1992) explain Equi NP deletion using the following sentences:

(13a) Everyone wants [everyone to leave].
(b) Everyone wants [_to leave].
(Larson et al, 1992, p. viii)

In example (13b), where there is deletion of subject of the bracketed embedded clause *to leave,* is an instance of Equi NP deletion. The embedded subject is deleted because it co-refers with the subject *every one* of the matrix clauses. After the deletion, it is expected that there is an "understood" subject occupying the subject of the embedded clause although it lacks phonetic content.

Extended Projection Principle

The Extended Projection Principle (EPP) was introduced by Chomsky (1982) to discuss the notion of subject of syntactic constructions. It is an addendum of the Projection Principle. EPP requires that all "projections of IP have a subject, i.e, [Spec, IP] must be projected" (Haegeman, 1994, p. 255). This means that clause/sentences must have a subject. Clauses that lack an overt subject must necessarily

have an intuitive or covert subject. Some verbs such as *feed, treat* require referential subjects, for example:

(14) a. The hyenas feed on what the lions leave behind.
b. The audience treats the host like a deity.
(Patterson, 2021, p. 1)

In examples (14a) and (14b), the verbs feed and treats take referential subjects the *hyenas* and the *audience.*

However, some verbs do not require or permit subjects regardless of whether the predicate assigns a theta role to the subject or not. For example:

(15) a. It happened to rain during our camping trip.
b. *The sky happened to rain during our camping trip.
Adapted from Ellis (2022, p. 1)

In example (15a), the verb *happened* requires an NP it that has no referent while in (15b), the sentence is ill-formed semantically because the NP *the sky* has lexical meaning. NPs that have no lexical meaning are referred to as *expletives*. Expletives only occupy subject positions in a sentence to add more meaning to it.

The EPP rule also applies to pro-drop languages as well as infinitival constructions. For pro-drop languages, certain classes of pronouns may be omitted, yet syntactically and semantically correct, the empty category *pro* can fulfill the requirement of EPP. For example, in Italian:

(16) a. Gianni parla - 'Gianni speaks.'
b. Parla - '(s)he speaks.'
(Koeneman & Zeijistra, 2019)

Examples (16a) and (16b) are both grammatical despite the fact that in (16b), the subject is dropped. So, when in an example like (16b), it is assumed that the subject is there but lacks phonetic content and that verbal morphology is sufficiently needed to identify the subject (Koeneman & Zeijlstra, 2019).

Conclusively, EPP proposes that all syntactic constructions must have a subject. These subjects can either be overt (have phonetic content) or covert (lack phonetic content). The overt subjects are nouns, pronouns or expletives/pleonastics. Covert subjects are PRO, pro and other null constituents.

The Concept of PRO

PRO is the subject of infinitival constructions. It occupies the *Spec, IP* of the embedded infinitival clause after the subject of the embedded clause that refers to the preceding NP of the same matrix has been deleted (see examples 6, 7 and 8). The empty category *pro* can fulfill the requirement of EPP.

The empty category pro differs from PRO, even though they are both examples of empty category (see Danjuma (2015, 2018), Akinrẹmi (2008)). Larson et al (1992, p. vii) postulate that control was introduced by Postal (1970) to address the issue of PRO. However, the phenomenon was broadly used by Chomsky (1965) to motivate the notion of deep structure.

Larson et al (1992) claim that the deletion of the NP of an embedded clause that is anaphoric was already anticipated in Postal's (1970) remarks that "one can naturally think of deletion governed by co-reference as equivalent to the existence of some general pronoun, call it *Doom*, which accidentally has the null phonological shape." Postal's (1970) work was aimed to show that the deleted NP of embedded clause is not a full NP, thus, he dubbed it *Doom* (Landau 4; Larson et al ix). Postal's *Doom* morpheme later became PRO in

Chomsky's works (Crystal 172; Larson et al ix). Chomsky (1981), Sanusi (2005, p. 47) note that the abbreviation PRO has been devised to stand for phonetically null (i.e., "inaudible") pronoun that occupies the subject of infinitives in control structure.

Thus, with the transformation of the *Doom* morpheme to PRO in later works of Chomsky, examples (9b, 10b, 11b, 12b and 13b) would be rendered as (17b, 18b, 19b, 20b, and 21b):

(17a) I would hate to find the house empty.
(b) Ii would hate [PRO_i] to find the house empty

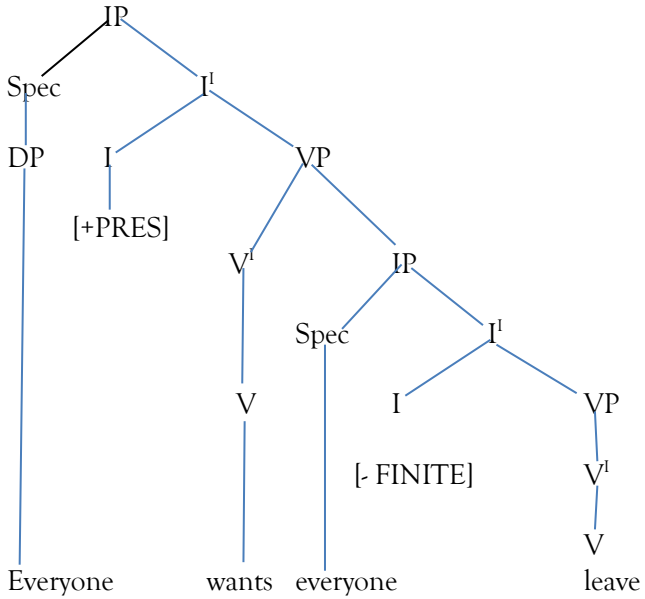
(18a) Juan tató [ ] de salir
(b) $Juan_i$ tató [PRO_i] de salir
Juan try INF leave
"Juan tried to leave"

(19a) Gianni ha tentato [ ] di cantare
(b) $Gianni_i$ ha entato [PRO_i] di cantare
Gianni Tns. Marker try INF sing
"Gianni tried to sing"

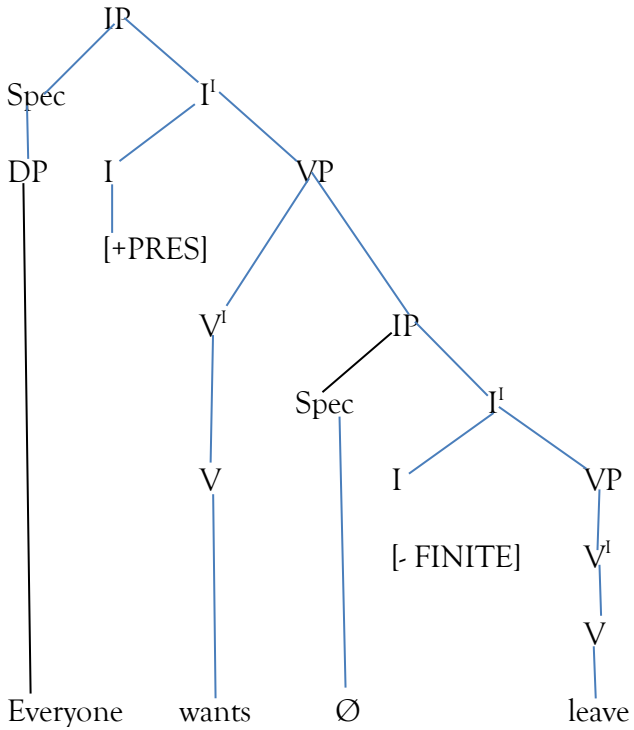
(20a) O João tentou [ ] a cantar
(b) O $João_i$ tentou [PRO_i] a cantar
Det. João try INF sing
"João tried to sing"
(21a) Everyone wants [_ to leave]
(b) Everyone wants [PRO_i to leave]

In (17b, 18b, 19b, 20b and 21b), PRO co-refers with *I, Juan, Gianni, João* and *everyone* which are the subjects of the matrix clauses and have the same indexation. The above sentences (17b, 18b, 19b, 20b and 21b) are in their S-Structure form after the Equi NP Deletion rule has been applied to their D-Structure form in (9a, 10a, 11a, 12a and 13a). This

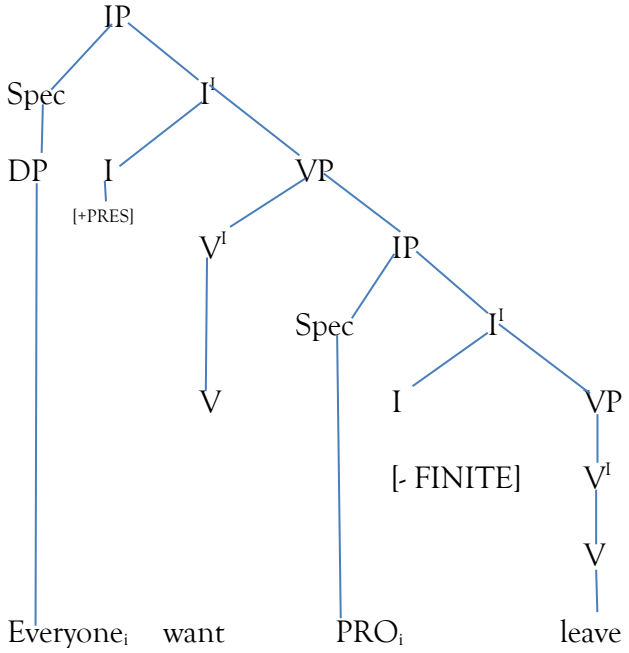
can be illustrated using phrase markers shown below where (13a), (21a) and (21b) will be (22a), (22b) and (22c): (22a) **D-Structure:** this is when all words are arranged in their canonical position. Here, no transformational rule has been applied to the expression as seen below:



(22b) **Equi NP Deletion:** this is when the Spec IP of the embedded values which is anaphoric to the Spec IP of the matrix clause is deleted through Equi NP Deletion as indicated below:


IP
Spec
I'
DP
I
VP
[+PRES]
V'
IP
Spec
I'
V
I
VP
[- FINITE]
V'
V
Everyone
wants
Ø
leave

(22c) **S-Structure:** this is the derived expression which is said.



From the above explanations, one will understand that although PRO is neither physically realised nor said (that means it lacks phonetic content), it is believed to be present and can be bound or co-referred to an antecedent NP either in subject or object position of a matrix clause. PRO occurs in an ungoverned position. This means that the infinitive verb that follows it cannot assign case or theta role to it. PRO can only receive Case in an exceptional situation known as Exceptional Case Marking (ECM).

The concept of PRO and Equi NP deletion is present in Nigerian languages. Goemai, for example, has infinitival constructions in which PRO occupies the subject position. Consider the following:

(23) M**u̲ĕ**p$_i$ dók ɓuet Laraba [PRO$_j$ dégòe muààn góe sék múk]

(They PAST order Laraba INF go his own)
'They ordered Laraba to go on her own.'

(24) Zamnaan$_i$ dók zèm [PRO$_i$ dégòe muààn góe sék múk]
(Zamnaan PAST willing INF go his own)
'Zamnaan was willing to go on his/*one's own.'

(25) M<u>u</u>ĕp$_i$ dók ƙaar Amina$_j$ [PRO$_j$ dégòe muààn góe sék múk]
(they PAST advise Amina INF go her own)
'They advised Amina to go on her own.'

(26) [PRO$_{arb}$ dégòe shínƙaleen] tang ɓuet Tsenlong kát ńdòebi
(INF do behave will make Tsenlong get something)
"To behave oneself in public would help Tsenlong."

(27) [PRO$_{arb}$ dégòe gyàńd oè Henzem$_i$] dóe goetyakpya
(INF dance with Henzem bring joy/happiness)
'To dance with Henzem is fun.'

In (23), *Laraba*, which occupies the object of the matrix clause, controls PRO, the subject of embedded infinitival clause. PRO refers with *Laraba*. In (24), the *Zamnaan*, the subject of the matrix clause, controls PRO, the subject of embedded infinitival clause. In (25), *Amina*, the object of the matrix clause, controls PRO, the subject of infinitival clause. All the noun phrases in (23, 24 & 25) which are *Laraba*, *Zamnaan* and *Amina* are occupants of occupants of subjects of their respective embedded infinitival clauses. Due to the transformational rule of Equi NP Deletion, immediately the subjects are deleted, and to satisfy the Extended Projection Principle, PRO occupies their position and refer to them. This can be seen through indexation. In (26) and (27), PRO appears in bracketed infinitival clauses which the clauses serve as subjects of the sentences. As it can be seen, PRO has no referent or controller. PRO in Goemai can be

controlled by the subject of a matrix, object of a matrix clause, and can be arbitrarily controlled and infinitive clauses are introduced by *dégòe* - English equivalent of *to* – followed by a verb in its simple form.

The Control Theory

The theoretical framework that studies PRO is the Control theory, a module of Government and Binding (GB) that deals with covert NPs. These NPs are PRO, which is the subject of infinitival constructions. Chomsky argues that PRO occurs in an ungoverned environment. Such infinitives come in embedded clauses. The theory manages the relationship between the subject and object of a matrix clause and the subject of an infinitival clause. The theory seeks to determine "the potential for reference of an abstract pronominal element PRO" (Crystal, 2008, pp. 112-113). PRO is said to be [+ anaphoric, + pronominal], however, [- phonetic]. This means that it is bound to an antecedent NP either in subject or object position of a matrix clause and lacks phonetic content. Nwogu and Anyanwu (2008) claim that "the idea behind the Control Theory is the choice of an antecedent for the (abstract) PRO which serves as the understood subject of the infinitival clause."

Control Theory is concerned with how PRO gets its meaning and how it is connected to other arguments in a sentence. It tries to generate a mechanism that can explain how infinitives are assigned a subject that is not phonologically present (Reggaini, 2011). In early Transformational Grammar, Control Theory was discussed in terms of Equi NP deletion. Later, Control Theory was used by Chomsky (1965) to motivate the notion of Deep Structure.

Conclusion

In conclusion, PRO is said to develop by looking at its origin from Equi NP Deletion, a transformational rule that deletes the subject

of an embedded infinitival clause which refers to the preceding NP of the matrix clause of the same sentence. The analysis reveals a shift from a rule to a more principled approach of the EPP.

In sentence formation, after the deletion of an anaphoric NP of the embedded infinitival clause, the rule of EPP states that the Position — of the deleted NP — cannot be left 'vacant'. With the development of PRO as a null subject, occupying the Spec IP of infinitival construction after Equi NP Deletion, the rule of EPP has been satisfied. The development of PRO through Equi NP Deletion shows a modification of theoretical frameworks from the Standard Theory to the Minimalist Program.

The concept of PRO was established in Goemai, an Afroasiatic language spoken in Nigeria. When phonetic subjects are deleted in infinitival clause in Goemai, just like in English, PRO occupies the positions to satisfy the Extended Projection Principle.

PRO in Goemai can be controlled by the subject of a matrix, object of a matrix clause, and can be arbitrarily controlled and infinitive clauses are introduced by *dégòe* - English equivalent of *to* – followed by a verb in its simple form.

Tracing the development of PRO through Equi NP Deletions shows the dynamic nature of linguistic theory and demonstrates the importance of revisiting and re-evaluating concepts in linguistics to simplify some complexities in the study of language.

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