



## ABSTRACT

The study examines the application of the trace theory of movement in the Mwaghavul language – a Chadic language of the Afro-asiatic phylum – while exploring the syntax of the extraction site within Chomsky's Government and Binding framework and the types of trace that can possibly be found in the language. The data for the study were elicited from native speakers of the Mwaghavul language through face-to-face interviews and structured questionnaires. The analysis showed that Mwaghavul allows non-terminal trace (gap) and terminal trace (a pronominal element) at the

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## RACE THEORY OF MOVEMENT IN THE MWAGHAVUL LANGUAGE

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## Introduction

The trace theory of movement rules is an advancement of Chomsky's Transformational Grammar (TG) which was introduced to explain the relation between transformed structures and the interpretations of the derived sentences. This is a concept which maps traces to S-structure to enable gaps created by movement rules to be analyzed, thereby, reducing the descriptive power and variety of grammatical rules, that is, to converge on an explanatory theory of UG (Universal Grammar). It has enriched S-structure with traces which play some roles in semantic interpretation. Studies for English and some other languages reveal that movement results in empty category traces that occupy the extraction sites of moved elements in syntactic structure. In a language like Swedish, resumptive pronouns alternate freely with gaps and have been analyzed as alternative realizations for traces or the phonetic spell-outs for the features of traces. These positions on the nature of trace suggest the need for parametric variation in trace.

This paper provides an account of the trace theory of movement rules as applied to the Mwaghavul language – a West Chadic language of the Afro-Asiatic phylum mainly spoken in Mangu Local Government Area of Plateau State, Nigeria (Blench, Yeeden, & Bess, 2014) – along the lines of Chomsky's Government and Binding (GB) theory. The study will describe the nature of trace in Mwaghavul, exploring the types of trace that could be found in the language.

### A Brief Overview of Government and Binding Theory

Government and Binding theory is a syntactic theory propounded by Noam Chomsky and his associates in (1977) in his lecture on Government and Binding (GB) Theory. The theory is alternatively



extraction site of a moved element in *wh*-movement but allows only non-terminal trace in NP-movement.

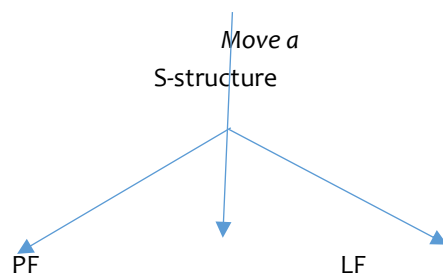
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**Conventions and abbreviations**

3sg	= Third-person singular
AGR	= Agreement Marker
D-structure	= Deep Structure
e	= Empty
FUT	= Future Tense Marker
<i>i</i>	= Structural index used for indicating co-reference
LF	= Logical Form
NP	= Noun Phrase
OPR	= Operator
PF	= Phonetic Form
Q	= Question Marker
<i>t</i>	= Trace
S-structure	= Surface Structure
TNS	= Tense Marker
<i>Wh</i>	= Question words that begin with <i>wh</i>
[ <sub>l</sub> ]	= Low tone
[ <sub>m</sub> ]	= Mid-tone
Unmarked	= High tone

referred to as the Principles and Parameters (P&P) theory as it “takes grammar to be characterized by a set of invariant principles, which account for cross-linguistic commonalities, and a number of parameters, which permit a restricted envelope of variation” (Chomsky, 2001, p. 482). Chomsky (2001) maintained that based on this theory, a sentence is characterized by four distinct levels of representation. First, sentences are generated beginning at the level of D-structure (which projects properties of lexical items into the syntactic structure). Secondly, the level of the S-Structure is then derived from the D-structure through Move alpha (a set of movement operations). The S-structure level serves as input both to a further set of movement operations to give rise to Logical Form (LF) (the interface with semantic interpretation) and also to a set of operations of some sort to yield Phonological Form (PF) (the interface with articulation and perception) (Chomsky, 2001). The following diagram illustrates the GB model:

(1) D-structure





Chomsky (2001) further asserts that the principles of GB theory impose constraints on these four levels of representation. Parameters, in contrast, are points in which a language can opt for one or another way to satisfy some constraints.

Thus, trace the theory of movement rules is discussed within the theoretical framework of Government and Binding. The theory was introduced with the sole aim of explaining the relationship between transformations and the interpretations of the derived sentences in transformational grammar. Chomsky (1981) noted that the most recent version of the trace theory arose in the early 1960s to reduce the descriptive power and variety of grammatical rules, that is, to converge on an explanatory theory of Universal Grammar.

### **The Concept of trace:**

Trace is defined as “a formal means of marking the place a constituent once held in a derivation before it was moved to another position by transformational operation” (Crystal 2008, p. 489). For example:

- (2) a. It is certain [the man to come]  
b. The man is certain t to come.

Riemsdijk and Williams (1986, p. 139) noted that trace “is a syntactic category (such as NP) that has been voided of phonological content and internal structure, retaining only an index that is identical to the index of the material that was moved out of the trace position.” For example:

- (3) [NP Who] NP<sub>i</sub> did you see [NP e] NP<sub>i</sub>

Example (3) illustrates the trace *NP<sub>e</sub>* and the moved element *Who*.

The kind of trace found in NP-movement (basically in raising, ergative and passive construction) is known as **NP-trace**. NP-trace is illustrated thus:

- (4) a. I was born in Tanzania.  
b. The mail was returned unclaimed.

Thus, (4a) and (4b) above would have declarative structure counterparts (5) below (Yusuf, 1998, p. 81):

- (5) a. NP<sub>x</sub> bore me in Tanzania.  
b. Some NP return the mail without claiming.

Yusuf (1998) asserts that whether or not the supposed bases (5a) and (5b) are accurately constructed, there is an assumption that there are some more basic structures with the preferred basic word order in (6) from where the structures in (5) are derived. He proposed a D-structure for (5) like (6) below:

- (6) a. NP<sub>e</sub> TNS-AGR be born ME in Tanzania.  
b. NP<sub>e</sub> was returned THE MAIL without claiming.



Further examples are provided by the ergative construction (an intransitive clause with a transitive counterpart in which the transitive object corresponds with the ergative object) (Radford, 1988). For example:

- (7) a. [e] will break the glass  
b. [the glass]<sub>i</sub> will break *ti* (Ndemele, 1992, p. 63).

(7a) is the underlying form of its (b) counterpart. Thus, the superficial intransitive subject in the ergative construction originates internally as the underlying object of the transitive verb.

The kind of trace which originates from *wh*-movement is termed **WH-trace**. *Wh*-movement leaves a non-terminal trace, in the sense that the former position of the *wh*-phrase remains empty in the derived form. For example:

- (8) a. You want to see who?  
b. Who<sub>i</sub> do [you want to see *ti*] (Yusuf, 1998, p. 96).

In (8) above, the *wh*-word “who” has been moved from its original position into COMP and an empty category trace (*t*) is left at the extraction site. A non-terminal trace is distinguished from a terminal trace which leaves a pronominal element at the extraction site of the moved element (Chomsky, 1977). Below is an example from Yorùbá:

- (9) Tai ni [ó<sub>i</sub> pa ewúré]  
who be 3sg kill goat  
'Who killed the goat' (Yusuf, 1998, p. 181).

In (9) above, “ta” (who) moved to the subject position and left behind a pronominal element “ó” at the extraction site.

There is another instance of *wh*-movement which is termed topicalization, which Radford (1981, p. 230) defines as “an unbound movement rule, by which a *wh*-phrase can move indefinitely far to the left, across an unbounded number of clause boundaries, into initial positions in some sentence (or clause).” Chomsky (1977) maintains that the *wh*-phrase is moved into COMP. For example:

- (10) a. I don't think I'd ever do that kind of thing  
b. That kind of thing, I don't think I'd ever do – (Radford, 1981, p. 213).

(10) Above illustrates topicalization. The discussion on trace so far has shown that movement results in empty category traces that occupy the extraction sites of moved elements in syntactic structures. However, trace may be visible (terminal) or not visible (non-terminal) to varying degrees, depending on the language (Yusuf, 1998). This suggests the need for parametric variation in the realization of trace.



### Methodology

This paper is aimed at exploring the nature of trace movement in the Mwaghavul language within Government and Binding framework while examining the types of trace that could be found in the language. Data for the study was elicited through face-to-face interaction with informants who are native speakers of the language in its natural linguistic area – Mangu Local Government Area of Plateau State, Nigeria. One of the researchers used native speaker intuition to affirm the validity and reliability of the data and also to generate further data. The data are analyzed qualitatively to show how Chomsky's Principles and Parameters approach is applicable in the aspect of Mwaghavul's trace theory of movement. The following sections explore the trace theory of movement rules in the Mwaghavul language.

### Results and Discussions

The Mwaghavul language allows a non-terminal trace (gap) and a terminal trace (a pronominal element) at the extraction site of the moved element in *wh*-movement. The language allows a non-terminal trace in *NP*-movement. Thus, trace in Mwaghavul can be classified into *wh*-trace and *NP*-trace which are examined in the following sections.

#### *Wh*-trace

*Wh*-movement leaves a non-terminal and a terminal trace in Mwaghavul, in the sense that it leaves an empty category trace at the extraction site in some constructions such as *wh*-questions and relative clauses, while it leaves a pronominal element at the extraction site in constructions like topicalization. The following are examples of *wh*-construction:

(11) a. [Joon n-ji [àpùrang ye]]  
John FUT-come when Q  
'John will come when?'

b. Àpùrangí Joon wùri n-ji tí ye?  
when John AGR FUT-come Q  
'When will John come?'

(12) a. [Maria seet [àme ye?]]  
Maria buy what Q  
'Maria bought what?'

b. Àmeí Maria wùra dòm tí ye?  
what Maria AGR want Q  
'What did Maria want?'

(13) a. [Maria dòm [àwe ye?]]



Maria love who Q

'Maria loves who?'

b. Àwei Maria wura dòm ti ye?

who Maria AGR love Q

'Who does Maria love?'

In (11), (12) and (13) above, the *wh*-words "àpùrang" (when), "àme" (what) and "àwe" (who) have been moved from a post-verbal position to a sentence-initial position. The extraction site of movement is occupied by a non-terminal trace in (11), (12) and (13). This operation tends to be optional in the language.

The following examples are relative clauses:

(14) Gwàr [OPR<sub>i</sub> dī n naa t<sub>i</sub>]

man that I see

'The man that I saw'

(15) Nbiìse [OPR<sub>i</sub> dī nàa chèt t<sub>i</sub>]

food that mother cook

'The food that mother cooked'

(16) Mar [OPR<sub>i</sub> dī ri sak t<sub>i</sub>]

farm that he cultivate

'The farm that he cultivated'

In (14), (15) and (16) above, an empty *wh*-operator has been moved to the left of the relative marker "dī" (that) from a post-verbal position in line with the analysis of relative clauses by Chomsky (1977) and Radford (1981). The moved operator leaves an empty category trace (gap) at its extraction site.

The following are examples of topicalization:

(16) Motò dīisì, [comp OPR<sub>i</sub> Joon seet nīi]

car this John buy it

'This car, John bought'

(17) Nbiìse dīisí, [comp OPR<sub>i</sub> mu dòm nīi]

food that they like it

'That food, they like'

(18) Shàgàl dīisì, [comp OPR<sub>i</sub> mu wàt nīi]

Money this they steal it

'This money, they stole'



In (16), (17) and (18) above, an empty *wh*-operator has moved from the post-verbal position and left behind a terminal trace “*ni*” (it) at the extraction site, in line with Chomsky’s (1977) analysis of topicalization. This shows that in addition to empty category trace, *wh*-movement may also result in a terminal trace, that is, a pronoun copy appears at the extraction site of the moved *wh*-phrase.

### NP-trace

NP-trace is non-terminal in Mwaghavul. This implies that the trace of a moved NP is an empty category; for example, in the Mwaghavul ergative construction, as in the following examples:

(19) [Pòo-lu nī]i tep ti  
mouth-room the break  
‘The door broke’

(20) [Motò ni]i tikòok ti  
Car the spoil  
‘The car spoiled’

(21) [Bool ni]i chigir ti  
Ball the roll  
‘The ball rolled’

In (19), (20) and (21) above, empty category traces are left at the extraction sites when the object of a transitive verb moves into the subject NP-position. The moved object becomes the S-structure subject of the ergative construction.

### Conclusion

The assumption that movement rules leave a non-terminal trace is held for several languages in Transformational Grammar. Thus, Chomsky (1981) noted that what we expect to find is a highly structured theory of Universal Grammar based on several fundamental principles that sharply restrict the class of attainable and narrowly constrain the form, but with parameters that have to be fixed by experience. The statement of Chomsky about parametric variation is attested in the Mwaghavul language, in that, traces have been shown to be both non-terminal (leaving a gap) and terminal (leaving a pronominal element at the extraction site of moved item) in the language, depending on the kind of movement operation. This study and its findings will help in enriching the knowledge on the study of African linguistics, particularly in the area of syntax.

### References

- Chomsky, N. (1977). On *Wh*-movement. In P. W. Culicover, T. Wasow, & A. Akmajian. (Eds.), *Formal syntax*, (pp. 71-132). New York: Academic Press.
- Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht: Foris Publications.
- Chomsky, N. (2001). Derivation by Phase. In R. Kayne, R. Zanuttini, & T. Leu. (Eds.). *An annotated syntax reader: lasting insights and questions*, (pp. 482 – 496). London: Blackwell.
- Crystal, D. (2008). *A dictionary of linguistics and phonetics*. New York: Basil Blackwell.
- Ndemele, O. M. (1992). *The parameters of universal grammar: A government-binding approach*. Owerri: African Educational Services.
- Radford, A. (1981). *Transformational syntax*. Cambridge: Cambridge University Press.
- Radford, A. (1988). *Transformational grammar: A first course*. New York: Cambridge



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University Press.

Riemsdijk, H. V. & Williams, E. (1986). *Introduction to the theory of grammar*. Cambridge: MIT Press.

Yusuf, O. (1998). *Fundamental of syntax and the study of Nigerian languages*. Ijebu-Ode: Shebiotimo Publications.