

**MEANING-MAKING POTENTIAL OF
GAPPING IN URDU AXIOMS: A STUDY IN
CATEGORIAL GRAMMAR**

BY

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NATIONAL UNIVERSITY OF MODERN LANGUAGES

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**Meaning-making Potential of Gapping in Urdu Axioms:
A Study in Categorical Grammar**

By

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Candidate of **Master of Philosophy** at the National University of Modern Languages do hereby declare that the thesis **Meaning-making Potential of Gapping in Urdu Axioms: A Study in Categorical Grammar** submitted by me in partial fulfillment of MPhil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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ABSTRACT

Title: Meaning-making Potential of Gapping in Urdu Axioms: A Study in Categorical Grammar

Gapping is challenging as it is not merely a linguistic phenomenon of remnants left behind in the deep structure but it also satisfies the syntactic patterns and meets standard constituency tests. This study aims to find out the extent to which gapping in English is similar to or different from the gapping in Urdu in its syntactic patterns and meaning potential. For the purposes of this research, the lens that has been used to investigate the frequency of occurrence of gapping in Urdu embedded gapped axioms is developed within the context of transformational grammar and the minimalist approach. Primarily Johnson's (1996, 2009) framework has been applied to analyse the data as it is framed under Minimalist work, formulated as a variant of Categorical Grammar (CG) called Hybrid Type-Logical Categorical Grammar. The present study has attempted to apply constituency tests to find low VP coordination analysis in Urdu compound and complex axioms. Through syntax-semantic interface, occurrences of Gapping/Ellipses have been generalized in an instance of coordination in like-categories with the development of hypothetical reasoning. Gapping in formal Urdu embedded axioms has been analyzed in terms of their potential for verb and noun phrases to go missing, applying the basic syntax of gapping on Urdu elided clauses to interact with an independently driven examination of logical operators. To find and measure the height of ellipses with an ability or inability of gapping in Urdu, Johnson's (1996, 2009) framework is selected to license variants of gapping that make meaningful strings in Urdu. Through variants of categorial grammar in gapping, such as: Pseudo gapping, sluicing, VP-Ellipsis and Nominal Ellipses, the potential for phrases to go missing in Urdu propositions has been measured through deontic operators for schematic configuration. The study finds out that all variants of gapping in English are partially applicable to Urdu axioms. This research would provide future researchers with an effective lens for hybrid type logical categorial grammar in a syntactic-semantic interface to critically analyze ambiguous sentences used by the speakers of Urdu language.

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LIST OF ABBREVIATIONS

| | |
|-------|--|
| CG | Categorial Grammar |
| HTLCG | Hybrid Type-Logical Categorial Grammar |
| TG | Transformational Grammar |
| TGG | Transformational generative Grammar |
| GPSG | Gapping in a Phrase Structure Grammar |
| ATB | Across-the-Board |
| AgrP | Agreement Phrase |
| DP | Determiner Phrase |
| VP | Verb Phrase |
| TP | Tense Phrase |
| AdvP | Adverb Phrase |
| Conj | Conjunction |
| DIL | Dynamic Intentional Logic |
| DRT | Discourse Representation Theory |
| TV | Tense Verb |
| S | Sentence |
| AuxP | Auxiliary Phrase |
| SG | Singular |
| DAT | Dative |
| CAUS | Causative |
| PROG | Progressive |
| PRV | Perfect Verb |
| HAB | Habitual |
| NOM | Nominative |
| SG | Singular Gender |
| PRS | Present Sentence |
| GEN | Genitive |
| DEF | Definite |
| EMPH | Emphatic |
| ERG | Ergative |
| F | Feminine |
| FUT | Future |
| GEN | Genitive |
| M | Masculine |
| NEG | Negation |
| OLB | Oblique |
| PL | Plural |
| PRF | Perfective |
| PRP | Participle |
| PST | Past |
| Q | Question |
| REL | Relative Pronoun |
| AuxHP | Habitual Auxiliary Phrase |
| AuxPr | Progressive Auxiliary |
| AuxD | Durative Auxiliary |

| | |
|------|-------------------------------|
| VPE | Verb Phrase Ellipses |
| NP | Noun Phrase |
| AspP | Aspectual Phrase |
| RP | Remnant Phrase |
| C | Complementizer |
| Disj | Disjunction |
| SubP | Subject Phrase |
| FocP | Focused Phrase |
| PP | Prepositional phrase |
| FinP | Finite Phrase |
| HPSG | Head Phrase Structure Grammar |
| Spec | Specifier |

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DEDICATION

This thesis is dedicated to my

late Maternal Aunt Ms. Ghazala Zareen

for her love, endless support and encouragement.

Dear Khala Jaan, you will always live in my heart.

CHAPTER 1

INTRODUCTION

1.1 Gapping as Canonical Coordination

Gapping is a type of ellipsis that involves movement of remnant phrases followed by deletion. It is a meaning making process which involves two clauses that are similar in some sense. For example:

1(a). Amna bought a car and Ali bought a car too. (English axiom without Gapping)

(Urdu axiom without gapping)۔ آمنہ نے ایک کار خریدی اور علی نے بھی ایک کار خریدی۔

1(b). Amna bought a car and Ali ~~bought a car~~ too. (English axiom with gapped clause)

(Urdu axiom with gapped clause)۔ آمنہ نے ایک کار خریدی اور علی نے بھی اسے کار خریدی۔

In 1(b), the first clause is a complete clause (known as source clause) while the second clause (called the gapped clause) occurs having ellipsis due to the omission of a finite verb and optionally some other material may go missing. In a number of languages, gapping occurs in embedded clauses. Gapping introduces a variety of ellipses. The height of ellipses measures the ability or inability of gapping in a language and provides license to gapping to be embedded in a specific language. In some languages gapping is disallowed; however, the ban on embedding is not universal. Gapping is specifically an odd illustration of non-canonical coordination that deals with the deletion of main verb/auxiliary or some larger string from non-initial conjuncts.

(c) Rida bought a pen, and Hina \emptyset a book.

ردانے ایک قلم خرید اور حنانے ایک کتاب. \emptyset .

In the example (c), a whole clause seems to be coordinated with a sequence of words which would be a clause if a Xerox of the verb in the first conjunct were introduced in the second conjunct. In the above-mentioned sentence, *Rida bought a pen* has a completely different status from *Hina a book* where \emptyset works as an operator for the overtly missing string from a conjunct. The material overtly missing from, but seemingly present in the interpretation of, the second conjunct can be quite a bit more extensive than just the matrix verb of the first. A large string containing a finite verb may undergo Gapping, and the gapped material may be comprised of an auxiliary + bare verb sequence.

Park (2019) argues that the missing constituent in the gapped clause is called overt constituent named as remnant. It is necessary to establish a relationship between the gapped clause and the source clause so that the gapped clause can make sense. An antecedent is a non-correlative part of a source clause. (Park, 2019)

1.

d. [Asif played hockey] source clause and [Haris tennis] gapped clause

آصف نے ہاکی کھیلی اور حارث نے ٹینس۔

Correlates= Asif, hockey ہاکی، آصف

Remnants= Haris, tennis حارث، ٹینس

Antecedent=played کھیلی

Sting (1d) interprets that both Asif and Haris played some game or sports but each a different game. This raises the question of whether or not there exists a criterion by which the completeness of a gapped phrase may be verified. How one is able to analyze the

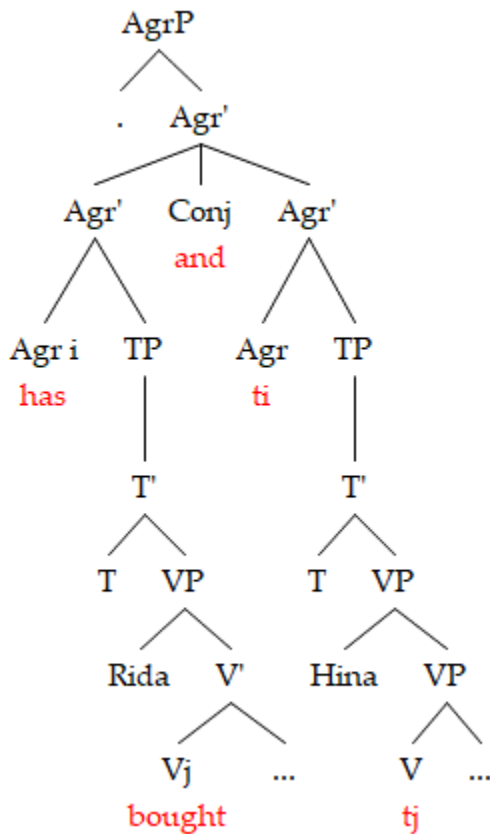
remnants with complete interpretations? one can only make sense of the meaning of the gapped phrase by comparing and associating the antecedent with the missing content.

1.2 Background of the Study

Gapping has traditionally been classified as a subcase of ellipsis until Johnson (1996, 2009) proposed an alternative analysis in terms of across-the-board (ATB) verb movement. He states that coordination happens at VP level; as a consequence, the subject of the first conjunct raises to Spec VP and the verb undergoes ATB movement out of VP to a position adjoining the T head whose complement is the conjoined VP.

A schematic configuration at the final position of *has* after ATB movement and prior to ATB movement is given below in figure (i) and (ii):

1. Rida has bought a pen and Hina has \emptyset a book. (In the second conjunct, the main verb undergoes deletion)



[AgrP [.] [Agr' [Agr' [Agr i has] [TP [T' [T] [VP [Rida] [V' [Vj bought] [...]]]]]] [Conj and] [Agr' [Agr ti] [TP [T' [T] [VP [Hina] [VP [V tj] [...]]]]]]]]

Importantly, in all scenarios, *has* is isolated from *bought* by its own trace after its ATB movement. To comprehend complex Gaps and movement of remnant for the contraction of negation on the auxiliary to occur, it is necessary to suppose that a further movement will allow not to move to a sister position of *was* in the example below:

Fatima was not called by Farina, but rather Amna by Fiza. $\square \neg (A \wedge B) \equiv \neg \diamond (A \wedge B)$

3.

a) [AgrP ... [TP [TP was ... not ... VP] but (rather) [TP was VP]]]

b) [AgrP ... *was* [TP [TP *ti* ... not ... VP] but (rather) [TP *ti* VP]]]

- c) [_{AgrP} ... wasi + notj [_{TP} [_{TP} *ti* *tj* VP] but (rather) [_{TP} *ti* VP]]]
- d) [_{AgrP} ... wasi + notj [_{TP} [_{TP} *ti* VP] but (rather) [_{TP} *ti* *tj* VP]]]

Johnson (1996, 2002) uses deontic operators for a schematic configuration in his framework. So, the same framework has been applied for schematic configuration in examples 3 (a), (b), (c), and (d) to identify Gapping with its variants on Urdu compound and complex clauses/axioms and predicates. This application on Urdu compound and complex clauses/axioms would enable one to check the possibility of meaning-making potential of Gapping in Urdu axioms.

(Rooth, 1992) studied each remnant by comparing it with appropriate alternatives in source clause in the form of correlates. The work suggests that alternates are commonly referred to as contrastive focus. The prosodic consequences of Gapping, specifically their contrastive focus, are examined. Well-structured gapped clauses with some missing material, i.e., finite verb or optionally other material reliant on that verb, can handle virtually any number of unbounded remnant phrases with contrastive foci. Remainders and other missing information may not be subject to grammatical constraints to ensure they are consistent with the elements of the source sentence. Because there would be more than one way to produce contrastive attention, it is possible that these sorts of pairings may give rise to ambiguity. (Coppock, 2001) through an illustration describes contrastive focus:

- e. John said that he wants Caviar for dinner, and Mary beans.

In (e) contrastive focus applies on Mary with respect to John or he, so here in order to construct focus an ambiguity raises to interpret the missing material in gapped clause.

This study aims to find occurrences of logical ellipsis in embedded clauses of Urdu language. The researcher has analyzed formal Urdu embedded axioms for the potential of their verb and noun phrases to go missing. Through variants of categorial grammar in

Gapping, such as: Pseudogapping, sluicing, VP-ellipsis and nominal ellipsis, the potential for phrases to go missing in Urdu propositions is measured.

1.3 Statement of the Problem

The problem under investigation pertains to the presence of gapped clauses within compound and complex sentences in both English and Urdu. While English users are familiar with the contraction or deletion of certain elements in some clauses, generally known as ellipsis, the phenomenon of gapping is equally evident in Urdu. However, in Urdu, gapped clauses retain their meaning even with missing primary constituents. This research is an attempt at establishing a specific structure for gapping in order to validate the authenticity of contracted clauses in Urdu. This study seeks to demonstrate that gapped clauses or conjuncts in Urdu complex sentences hold the same meaning potential as the original (ungapped) clauses. The study examines the meaning-making potential of gapping within a Hybrid Type-Logical Categorical Grammar, exploring various variants, particularly its influence on Urdu complex sentences, predicates, and axioms related to ATB movement and low VP coordination. By unraveling the structural connection between two conjuncts and showcasing how this relationship yields the interpretation of the second conjunct based on the first, this research aims to uncover a profound symmetry within complex embedded clauses in Urdu.

1.4 Research Objectives

The following objectives would be tried to achieve:

- i. To highlight the significance of light and main verbs in Urdu compound and complex sentences and their tendency to go missing in ellipses without changing the meaning-making process;
- ii. To estimate the impact of regular verb movement outside VP-layer in a head-final language, i.e., Urdu;

- iii. To find the potential of verb and noun phrases to go missing in Urdu axioms with complex predicates;
- iv. To determine the impact of gapping on meaning-making potential of Urdu axioms.

1.5 Research Questions

- i. To what extent do Urdu complex predicates resist the VPE (Verb Phrase Ellipsis) of the light and main verbs in their syntactic structure?
- ii. How does verb movement affect the VP layer in Urdu axioms with complex predicates?
- iii. How does gapping affect the meaning-making potential of Urdu axioms?

1.6 Theoretical Framework

The lens to analyze the extent of the occurrence of Gapping in Urdu axioms for this study, has been formalized within the framework of Transformational Grammar and Minimalist Approach. The generative capacity of minimalist grammars having shortest move is equal to context free linear rewriting system (Michaelis, 2001). Through lexical items, categorial grammar defines a finite set of categories (propositional logical formulae). Categorial minimalist grammar refers to logical calculus with the provision of elimination rule which requires axioms and variables. Categorial Grammar proves ellipsis and gapping logical and acceptable for a language with the occurrence of abstraction. Categorial generated language extends its definition under Lambek's grammar. To model the prosodic component of language using a lambda calculus, a variant of Categorial Grammar (CG) dubbed Hybrid Type-Logical Categorial Grammar has been developed as part of the Minimalist approach. Gapping can be analysed as like-category coordination at the combinatoric level thanks to the adjustable syntax-semantics interface of this framework,

and the mismatch between the hidden structure and the visible string is mediated by fictitious reasoning encompassing lambda binding in the articulatory constituent. It definitely restricts the researcher from undesirable structural asymmetry, which may affect low VP coordination analysis between the two conjuncts. Gapping in Phrase Structure Grammar (PSG) paradigm encased in GPSG, considers gapped conjuncts to be unprocessed strings of leftover constituents, and offers only hazy hypotheses to observe an interpretation for the gapped conjuncts to be generated based on its ostensibly full-clause sister. So, this framework enables one to focus on the transformational analytical thread which began with Johnson (2004).

1.7 Rationale of the Study

The justification for this study centers on comprehensively understanding the phenomenon of gapping, a distinct subset of ellipsis that holds relevance within specific languages. Gapping facilitates the intentional omission of segments comprising word strings, verb phrases, or noun phrases within axioms, while ensuring the retention of accurate, complete, and coherent meanings in compound and complex predicates intrinsic to a language.

This research is prompted by the intrinsic necessity of gapping, which plays a pivotal role in linguistic efficiency across languages. The pressing need for concise communication has led to the widespread use of contractions by language users, which is a direct consequence of the imperative role that gapping plays in facilitating effective message delivery within limited conversational timeframes.

The study seeks to uncover the utmost potential for gapping occurrences, encompassing its various subtypes. Its objective is twofold: to pinpoint the most suitable gapping structure tailored to the complexities of embedded clauses in Urdu, and to address a significant challenge shared by educators, language users, and learners alike. By doing so, this research aims to enhance comprehension and practical application of gapping, ellipsis, and contractions within the realm of Urdu compound and complex sentences.

Ultimately, the study's impact resonates across the spectrum of Urdu language stakeholders. Teachers, users, and learners stand to benefit equally from its findings, as it offers a remedy to the obstacles faced in grasping and employing the nuances of gapping, ellipsis, and contraction within intricate Urdu sentences. A clear understanding of the gapping structure inherent to Urdu compound and complex sentences endowed with ellipsis holds the potential to significantly reduce ambiguity, ushering in a new era of enhanced linguistic clarity and precision. This research thus navigates the what, why, and how of the role of gapping within Urdu language, paving the way for heightened communicative efficiency and understanding.

1.8 Research Method

The study employs Content Analysis based proposed methodology which measures occurrence of Gapping in a variant of Categorical Grammar (CG) called Hybrid Type-Logical Grammar (Hybrid TLOG) to be applied on Urdu compound and complex clauses/axioms with elided elements or constituents in one of the conjuncts. Data has been generalized, evaluated or analyzed with proposed methodology formulated through frameworks of Johnson (1996, 2009) and Lambek (1958). Categorical Grammar is taken as an independent variable while Johnson's (1996, 2009) Framework of Low VP coordination and Remnant Movement (Gapping/Ellipsis) is taken as dependent variable to find Gapping in Urdu complex embedded clauses. This hybrid framework enables the Researcher to find potential of phrases to go missing in Urdu compound and complex clauses with two or more than two conjuncts. The proposed methodology finds Gapping occurring inside the clauses of Urdu language. Further, a blend of two frameworks proved to be very helpful to find occurrence of possible logical ellipsis in embedded clauses/propositions/axioms of Urdu language. The researcher has tried to analyze formal Urdu embedded clauses/propositions/axioms and the potential of its verb and noun phrases to go missing. Through variants of categorial grammar in Gapping like Pseudogapping, sluicing, stripping, VP-Ellipsis and Nominal Ellipses, potential for phrases to go missing in Urdu propositions, have been measured.

1.9 Delimitation

The decision to delimit this study to specific subtypes of gapping, namely Pseudogapping, sluicing, VP-ellipsis/stripping, and nominal ellipsis, stems from the need for a well-defined focus that enables a thorough examination of the research issue. Delimitation serves the purpose of ensuring that the research maintains a manageable scope, allowing for a comprehensive and in-depth analysis within the constraints of available resources and time (Rebitzer, G., Ekvall, T., Frischknecht, R., Hunkeler, D., Norris, G., Rydberg, T., ... & Pennington, D. W. 2004).

In this context, the choice to concentrate on these four particular subtypes of gapping aligns with the study's goal of measuring the potential for phrases to be omitted within contracted Urdu compound and complex clauses. Each subtype presents distinct linguistic characteristics and challenges that warrant individual attention. By narrowing the scope of the study to these four subtypes, the study can delve deeply into their application, intricacies, and impact within the specific linguistic context of Urdu.

Furthermore, delimiting the study to these specific subtypes facilitates a more focused exploration of their occurrences, patterns, and implications within the realm of Hybrid Type-Logical Categorical Grammar. By not attempting to cover all twelve variants of gapping, the research can provide a more thorough and insightful analysis of the chosen subtypes, ultimately contributing to a clearer understanding of their role in contracted Urdu sentences.

In essence, the delimitation to these four subtypes is a strategic decision to strike a balance between the desire for depth of analysis and the constraints inherent in any research endeavor. It allows the study to offer valuable insights into the chosen subtypes' behavior while ensuring the research remains feasible and produces meaningful outcomes.

1.10 Operational Definitions

1.10.1 Axioms

Axioms are propositions which construct connectedness and compactness. Axiom of extension provides meaningful two sets having symmetry between same elements. It is accepted as true without requiring proof. Axioms are typically self-evident or intuitively obvious and are used as the basis for building logical arguments and deducing information. They are comprehensive enough to capture the essential elements and create logical reasoning (Amir & McIlraith, 2005).

1.10.2 Across the Board Movement (ATB)

The "across-the-board movement of verbs in gapping" refers to a linguistic phenomenon in which multiple verbs in a sentence undergo movement or displacement in order to create a gapping construction. Gapping is a syntactic structure where non-finite verbs or verb phrases are omitted in parallel clauses, while certain elements, usually the main verbs, remain intact.

In this phenomenon, the main verbs from multiple parallel clauses are moved "across the board" to a single position, typically preceding the ellipsis points that represent the omitted material. This movement is a way of creating a coordinated structure while omitting repetitive information. (Johnson, 2009)

1.10.3 Remnants in Gapping

In linguistic terms, "remnants" in gapping refer to the parts of a sentence that are intentionally omitted or elided, creating a gapped construction. Gapping is a syntactic phenomenon where parallel clauses share a common structure, and certain elements, often verbs and other repetitive material, are omitted from all but one of the clauses. The result is a more concise sentence that retains the core meaning.

Remnants in gapping contribute to the efficiency of language by allowing speakers to omit repeated information while still conveying the main idea. This syntactic structure is often analyzed in linguistic and grammatical studies to understand how languages manage ellipsis and coordinate information within sentences. (Vicente, L. 2010)

1.11 Chapter Breakdown

The first chapter named Introduction gives a holistic and overall view of the entire study including Problem statement, Research Questions, and Research Objectives, Rationale to Study, brief Theoretical Framework, brief Research Methodology and Delimitations to study.

Chapter two, Literature Review, reviews all previous researches in chronological order. Moreover, previous theories and their association with the study has been discussed.

Chapter three, entitled, Research Methodology, shed light on the complete procedure of data requirements, data generation and data analysis along with their rationale.

Chapter four, Data Analysis, presents an analysis of data along with findings and Discussions.

Chapter five named Conclusion has tried to answer the Research Questions after operationalization of the study, significance of this study, fulfillment of objectives, and future recommendations in this field.

CHAPTER 2

REVIEW OF LITERATURE

This chapter provides a detailed overview of the previous researches related to the chosen topic. Following a specific significant context of Generative Grammar related to study has been reviewed and the chapter has been organized into sections. This chapter has been designed through most appropriate pattern of deductive reasoning (generic to specific). The first section explains that sentences are structured through power of Transformation by comparing sentence structure at surface and deep level in order to determine the meaning more easily. Second section deals with Transformational Generative Grammar which further takes help of Categorical grammar under the Minimalist Approach. It explains grammatical competence of human to perceive success in meaning making process of unspoken words which are actually an elided part of spoken words. In third section Categorical grammar gives birth to critical thinking. Fourth section links categorial grammar with logical reasoning and in fifth section it is thoroughly explained that how logical reasoning through logical operators make it possible for gapping to occur in any language with its maximum or minimum variants under the Environment of Hybrid Type-Logical Categorical Grammar. After explaining Elliptical constructs at syntactic level, the sixth section provides key features of Gapping. The seventh section defines remnant with all its possible properties. In the end, in the light of the studies reviewed in the chapter, a gap has been identified for the present study.

2.1 The Notion of Generative Grammar

The notion of generative grammar was introduced into the field of linguistics by Noam Chomsky in 1950s. This notion proved to be most influential. Noam Chomsky afterwards molded the notion and with some more modification named it as Transformational Generative Grammar. Simple generative grammar explains that step by step a sentence is structured but once it is final, no changings can be made to it. Structure

of the sentence gets completed in the end. Rules will be final for that sentence structure but Transformational Grammar is different to a great extent. In TG, structure of the sentence is built up and finalized at first with the usage of context free rules. The resultant structure is called deep structure. With the permission for additional rules to interfere and make changes, transformation occurs. Application of further rules gives strength and power to Transformation to change the structure of a sentence and by adding new material to it. TG allows to move or delete some material from the structure altogether. The resultant structure of the sentence after enough transformation becomes surface structure. Due to the extreme power of Transformation, the surface structure may seem too different from the deep structure. That is why TG was accepted as theory of grammar which measures the sentence for its deferent level of structure. Moreover, it provides generalizations about structure of a sentence in term of abstract deep structure in order to determine the meaning more easily (Mambrol, 2020).

2.2 The Minimalist Approach and Categorical Grammar

Development in the early work of Transformational Generative Grammar gave birth to the Minimalist Program in linguistics which proposed that language is the perfect solution to derive accurate meaning from relative sounds (Lasnik, 2002). Researchers have different perspectives regarding Minimalism. In order to explain grammatical competence of human it assumes to perceive success and grow out of principles and parameter approach (Epstein & Hornstein, 1999). According to Chomsky the final result of Minimalist program is a different conception of the mechanism of language. Syntax is a consistent theoretical system of construction within a broad research agenda where Minimalist program is a perspective which emerges from the work of Noam Chomsky and it deals with the most prominent features of linguistic complexity in hierarchical form including the distinction between a finite-state grammar and complicated categories of phrase structure grammar (Retoré & Signes, 2010). Complex hierarchy formal languages depend on grammar of natural languages. Minimalist program is proved to be a cause of convergence of categorical grammar. The specialty about this approach is the absence of movement with

the main difference that atomicity of minimalist features does not allow recursive merge. Various rules and structure by following context free grammar derive semantic representation from categorial view of a transformational syntactic analysis (Coetzee, 2009). The generative capacity of minimalist grammars having shortest move, is equal to context free linear rewriting system.(Michaelis, 2001) Through lexical items categorial grammar defines a finite set of categories (propositional logical formulae). Specifically, categorial grammar deals with the fundamental premise that syntactic elements join as functions and arguments in natural language syntax (Francez & Steedman, 2003). By the 1930s, Kazimierz Ajdukiewicz, Yehoshua Bar-Hillel, and Joachim Lambek devised categorial grammars, which Richard Montague later expanded into Montague Grammar in the 1970s. Steedman (2019) states that Several comparable formalisms that have been developed for the syntax and semantics of natural languages as well as logical and mathematical languages are together referred to as "categorial grammar" (CG). All are generalisations of a central context-free grammar formalism that Ajdukiewicz first explicitly defined in 1935, but which had earlier antecedents in the work on semantic and syntactic categories by Husserl, Lejewski, Frege, Carnap, and Tarski, ultimately deriving from work in the theory of types, (traditionally to which some advance and current work in CG shows signs of returning). The defining features of these theories include an extreme form of lexicalism in which the lexicon bears the majority, if not the entire, burden of syntax; the modelling of constituents as functions and/or arguments both syntactically and semantically; the description of the relationship between syntax and semantics as chromatic harmony, with syntactic and semantic types appearing in the closest possible relation, the former merely encrypting the latter; and a tendency toward lexicalization. 2019 (Steedman)

2.3 Logical Reasoning/Critical Thinking Through Categorial View

Brannon (2005) critically analyses and states Despite the fact that both English and mathematics use the same computational recursion theory, their syntaxes are morphologically different. The syntax of mathematics may have evolved or developed independently of the syntax of language, or it may even be the other way around, despite

the mature human being's shown independence of the two. For instance, it's probable that the development of the language faculty changed the human brain, paving the way for sophisticated social cognition and mathematical syntax. Brannon (2005) is of the view that computational recursion is generated with an amalgamation of language and mathematics to construct a logical syntax to make some constituent independent giving possible reasoning along with acceptable meaning. There are universal properties of language specifically words and syntax which process human thought. Human cognition acts differently. Moreover, numerical reasoning along with language are neuroanatomically independent in humans. Through three different cases, it is demonstrated mathematics computationally deals with linguistic grammatical operations. Results from different tests and proofs verified that there is a strong neural organization of numerical cognition to understand and make a powerful relationship between syntax and grammatical complexities of a language. Humans have the property of recursion system that distinguishes him from animals. Recursive grammar is the only process which generates a cognitive mechanism. Linguistic computation then gives birth to conceptual processes having good empirical support that further support high-quality reasoning.

Dowden (2020 p.1) claims

That high-quality reasoning is called logical reasoning or critical thinking. Logical reasoning skills can be learned and improved. It is not a case of "Either you're naturally good at it or you're not." Rather, nearly everyone is capable of reasoning well, and everyone is capable of improvement. The opposite of logical reasoning is uncritical thinking, examples of which are fuzzy thinking, believing what somebody says simply because they raise their voice, and narrowly thinking about a problem without bringing in the most relevant information.

Arguments are classified by structural types in categorial grammar. The types are algebraic phrases like arithmetic expressions or logical formulas, and the types are the recursive closure of a collection of atomic types under a number of type-constructors.

According to the ‘meaning’ of the type-constructors, the categorial grammar rules are intended to express the laws that the kinds adhere to. A logical calculus or deductive system is composed of a set of such rules. A categorial grammar is made up of a lexicon that assigns kinds to basic words, a system of types, and a calculus for all those categories. The phrases that the calculus may derive from the lexicon constitute the language as so defined. The calculus would universally state all and only the rules of the kinds in the cleanest form of categorial language. The following topics are covered in this chapter: categorial semantics, quantifier scoping, fundamental discontinuous Lambek calculus, syntactic structures as proof nets, and Lambek calculus (Morrill ,2012).

Two components make up a categorial grammar: a lexicon that assigns each basic symbol a set of types (also known as categories) and some type inference rules that specify how the type of a string of symbols derives from the types of the constituent symbols. It has the advantage that the type inference rules can be fixed once and for all, so that the specification of a particular language grammar is entirely determined by the lexicon. The basic ideas of categorial grammar date from work by Ajdukiewicz (1935) and Hillel (1953). Syntactic calculus, developed by Joachim Lambek in 1958, defined function type constructors and other principles for function combination. Given that it is a denied or abridged logic, this calculus is a precursor to linear logic. Ad hoc syntactic structures for English are used in Montague grammar and are based on the ideas of categorial grammar. Although Montague's approach has received criticism for being syntactically boring, by linking it to a very effective formal account of natural language semantics, it increased interest in categorial grammar. The enhancement of syntactic coverage has been the subject of more recent categorial grammar research. Steedman and Szabolcsi's combinatory categorial grammar, which draws on the computational logic developed by Moses Schönfinkel and Haskell Curry, is one formalism that has drawn a lot of interest in recent years.

By virtue of the Curry-Howard isomorphism that exists between neuromorphic proofs and lambda terms, categorial grammars provide us with a very straightforward and classy interface between syntax and semantics. This is one of the many reasons why

categorial grammars are so appealing. If we apply the Curry-Howard isomorphism, we can achieve semantics in the Montague tradition simply by offering lexical substitutions in the lexicon. To assign a derivational meaning to a proof, we use roughly the same principles. The Lambek elimination rule may equate to function composition (operands) syntactically, but logically, it more closely resembles simple application and the introduction rule to abstraction.

2.4 Gapping as Variant of Hybrid Type-Logical Categorial Grammar

Gapping or Ellipses is a variant of categorial grammar dealt under Hybrid Type-Logical Categorial Grammar (Kubota & Levine, 2016). Finite set of propositions are generated through connectives \backslash and $/$ from a set of base categories: S (Sentence), np or dp (noun determiner phrases). Words are connected in series $w_1 \dots w_n$ in L (Lex) whenever $\forall i \exists e \in Lex(w_i)$ such that $t_1 \dots t_n \vdash S$ is derivable in a logical calculus. This propositional rule helps in understanding famous Residuation law which allows to do elimination from the logical viewpoint. As sequence of string remains logical so ellipsis remains acceptable with conveyance of logical meaning. Categorial minimalist grammar refers logical calculus with provision of elimination rule which requires axioms and variables. Categorial Grammar proves ellipsis and gapping logical and acceptable for a language. This generated language extends its definition under Lambek grammar. Lambek calculus introduces rules of abstraction which requires to have context and variables introduced by the axioms $x : A \vdash x : A$ (Amblard et al., 1996). From leftmost and rightmost positions abstraction occurs. Due to ellipsis, limitation occurs to describe context free language as it is difficult to describe various syntactic phenomenon like discontinuous constituents. A more comprehensive system is required, either by giving a logical foundation with a deep structure and an additional mechanism for word order computation, or by extending the logic by modalities and postulates while adhering to the parsing as deduction approach. Categorial Grammar under minimalist approach deals with deep structure rules and less with surface for construction, movement and deletion of variables or constituents existing in a string of axioms (Gribanova & Manetta, 2016; Landau, 2020; Manetta, 2018).

Moot (2014) has worked on categorial grammar and impact of lambda grammar on gapping. He says that when we try to translate the standard (multimodal) categorial grammar analysis of gapping in hybrid version into lambda grammar, we don't do any better.

$$((S|((S|NP)|NP))|(S|((S|NP)|NP))|(S|((S|NP)|NP)))$$

The concept that drives the investigation carried out by Hendriks (1995) is that the conjunction "and" uses the first two sentences in which there is a lack of a transitive verb as its arguments. Afterwards, a transitive verb completes a sentence by replacing the transitive verb in the second sentence with an empty string and returning the transitive verb to its proper place in the first argument (the sentences to its left that don't have a transitive verb). In a nutshell, It does an extraction analysis on the "omitted" transitive verb in the sentence on the right and a quantifying-in evaluation on the transitive verb in the sentence on the left. The fact that we employ a standard coordination formula for "and" is one of the many appealing aspects of this investigation. Specifically, the formula is an instance of the schema $(X|X)|X$, where X is defined as $(S|NP)|NP$. There is a strong temptation to believe that the lambda grammar analysis is not troublesome due to the fact that Hendriks (1995) employs a blend of extraction and quantification in their investigation. However, the most important takeaway from the analysis is that in order to construct a complex formula with a transitive verb, we require both extraction and in-situ binding, despite the fact that, in contrast to the coordination case, the verb appears in a negative position in the gapping coordination category. Since we lack the necessary tools to confine the word order for potential implications due to the fundamental asymmetry of lambda grammars, even the finest possible approximations are insufficient either syntactically or semantically. This is the case in every single scenario. (Moot, 2014)

Moot (2014) deduces that in light of the difficulties associated with describing lambda grammars, it is only natural to wonder how lambda grammars could progress in order to conquer these difficulties:

- i. Keeping the formalism and the analyses in their current states is a feasible solution, despite the fact that it is not a very appealing one. This is due to the fact that doing so would force us to significantly tame the formalism's syntax-semantics connectivity goals, which would result in the elimination of one of the appealing features of categorial grammars.
- ii. Having a comparable constant for an NP-complete issue does not look well for parsing the resultant grammar since, the grammatical size factor makes the Lambek calculus more challenging. It would appear that we are faced with two unattractive choices at this juncture: either we give up on the syntax-semantics interface entirely, or we severely scale back our goals for it, or we give up on the ability to really parse lambda grammars.
- iii. Several writers have investigated lambda grammars, which may yield a variety of structures including trees (Muskens 2001, de Groote 2002). When we construct trees, we have the choice to include a distinct yield algebra. This algebra provides guidance on how to interpret the many word orders that can be produced by a particular tree. This "multiple transduction" strategy has various different applications, and despite the fact that it is plausible that such multiple transductions may assist in alleviating few of the signs, It doesn't deal with the core cause of those signs, which is the asymmetry of the mechanism.
- iv. Beyond the scope of the simply typed lambda calculus, a number of researchers (de Groote and Marek 2007, Pogodalla and Pompigne 2012) have investigated the possibility of expanding the type theory of lambda grammars. According to Worth (2014), in the context of linear grammars (Worth 2014), an alternative method was provided that makes use of subtyping in conjunction with limits on the form of sub term cooccurrences.
- v. It presents a fresh viewpoint of the known (contrarily frequently overlooked) issues of lambda grammars with coordination and proved that a much larger class of examples than previously thought are affected by overgeneration and descriptive insufficiency issues owing to the absence of left-right symmetry (or,

at the very minimum, the lack of a way to reproduce the Lambek calculus introductory rules).

- vi. This suggests that the Lambek calculus, the Displacement calculus, lambda grammars, and Hybrid Type-Logical Grammars may all be transcribed into first-order linear logic by techniques of simple translations, which is consistent with the conclusions from (Moot & Piazza 2001) and (Moot 2014), and that in addition, many of the evaluations of linguistic events in these diverse systems converge upon translation into first-order linear logic; this is something more that needs to be mentioned. The practice of logic can be interpreted as a method for disentangling the functor/argument arrangement from the word order operations, which enables the connectives of all of these logics to be deconstructed.

2.5 Syntax of Complex Sentences Containing Gapped Clauses

Through Gapping construction is categorized with some right-hand missing conjunct of a verbal element, the left-hand conjunct of corresponding verbal element provides semantic understanding. The phenomenon of generating of a coordinator category schema $(X \setminus X) / X$ has attracted a great amount of attention in categorial grammar. By considering the approach of (Steedman, 2003) which aims to minimize ellipses or gapping to constituents coordination; moreover it keenly tries to find understanding through semantics by using standard division operators of categorial grammar. Left and right conjuncts are specially treated in the environment of minimal context of gapping TV a transitive verb. At initial stage conjuncts are categorized with respect to right hand side conjunct. A constituent is referred by Steedman which is formed by a subject and an object with the help of coordinators i.e. $TV \setminus S$ but it blocks ordinary application, further it does not allow coordination to occur with conjunct of left hand of the same category. Mostly right-hand conjunct does not appear to be a sentence so Steedman presents a special analysis of decomposition of S, into TV and $TV \setminus S$. he builds a constituent coordination between the conjuncts. $TV \setminus S$ at right side category is combined with TV on the left to give

resultant S. Through a distinctive contrived type of mechanism, a narrow conception of categorial grammar attempts to access verbal missing element in one of the conjuncts. Right hand conjunct is categorized and it accesses the verbal semantics of left conjunct which is possible only with division operators. An established context of categorial grammar enables right hand conjunct to be categorized as $S \uparrow TV$ (Morrill & Solias, 1993). For the reason to retrieve verbal semantic from left conjunct, the missing verbal element is made associated and available to the coordinator while combining with left hand conjunct. Right hand side conjunct is discontinuous product category and is dealt in context of categorial grammar through operators as $(S \uparrow TV) \odot TV$. Semantics of first category projects into second category of TV. Through assignment of “and” to the category, gapping is generated with semantics. Through gapping and logical operator, semantics is formalized in context of categorial grammar. Moreover it formalizes the logic of discontinuity in CG. (Morrill, 1993).

2.5.1 Elliptical Constructs at Syntactic Level

Gapping and VP ellipsis from all aspects and perspectives try to develop and analyze a framework integrating information syntactically, semantically and pragmatically that is at least tractable. Usually, it is assumed that at syntactic level, elliptical constructs are characterized by an incomplete syntax. So, first question arises here that how is it possible to license an incomplete syntax by the grammar? VP ellipsis and more strongly gapping make strong syntactic constrains. One more truth to be represented is that VP ellipsis, and all the more extraordinarily gapping, are dependent upon solid syntactic limitations. The unification-based categorial structure given by Unification Categorial Language (UCG) can be stretched out to address these two inquiries. At the semantic level, the accompanying inquiries emerge. In the first place, how is the missing semantics of the ellipsis to be authorized? - This is the goal issue. Second, how is the understanding of the ellipsis not entirely settled? - This is the translation issue. Third, are there any semantic limitations on the circulation of VP and verbal ellipsis, and provided that this is true, how might they be represented? (Gardent, 1992) has compared the framework of two sets, the

one is Dynamic Intentional Logic (DIL) and the second is Discourse Representation Theory (DRT). He tries to show that DRT is better prepared to represent Hang's alphabetic fluctuation limitation on VP ellipsis. Then he demonstrates the way that DIL can be stretched out to copy DRT as for this specific problem (Gardent, 1992).

According to (Park, 2019), a lot of research has been done to analyze Gapping linked to generated grammar. A general conception exists there that Gapping originates from conjoined sentences, afterwards reduction procedure occurs with the help of an operation of movement or deletion of some constituent. One diligent assumption also prevails that the supposed parallel between the elliptical and full sentence does not always hold equivalent. Furthermore, the syntactic relationship among the gapped and source clauses may not restrict to coordination.

2.5.2 Key Features of Gapping

Gapping occurs in compound and complex sentences in which embedded clauses function in some similar sense. The first clause is named as source clause which is complete containing finite verb while finite verb or some other material is missing in second clause which is also called gapped or elliptical clause.

(4) Asif played hockey and Haris tennis.

In the above string (4) *Asif played Hockey* formulates a source clause with finite verb while the other subordinate clause is a gapped clause constituted without finite verb. The missing constituent in the gapped clause is called overt constituent named as remnant. The constituent which is missing in gapped clause gets correspondence with the source clause in order to constitute sense. The constituent of source clause which does not correlate is called antecedent. (Park, 2019)

(5) [Asif played hockey] _{source clause} and [Haris tennis] _{gapped clause}

Correlates= Asif, hockey

Remnants= Haris, tennis

Antecedent=played

Sting (5) interprets that both Asif and Haris played some game or sports but each a different game. The question arises here, either there is some scale to measure or check the accuracy status of the gapped clause with missing material. How one is able to analyze the remnants with complete interpretations? The analysis is just possible by comparing and correlating the antecedent with the missing material in order to interpret the sense of gapped clause.

At abstract level, in any gapped clause any constituent from the string can go missing as long as a finite verb goes missing. This characteristic of no restriction for any other material to go absent, constitutes other variants of gapping in the form of VP-ellipsis and Pseudogapping. A successful Gapping must meet the criteria that missing material in elliptical clause must satisfy its antecedent which is present in source clause. Formal and semantic identity may be required according to specific required notions. Alleged verbs in gapped clauses may agree with their antecedents with different specifications. Sometimes missing material in elliptical clause appear in syntactic representations.

2.5.3 Properties of Remnants

It is almost impossible that a gapped clause may not contain remnants more than two. It is just because of grammatical constraints that remnants in elliptical clauses may not exceed from an accepted number traditionally. Through generative grammar, remnants may be increased but that sentence would be considered an odd one with high inducing unacceptability. Complexity in sentence brings difficulty to recover missing verb and semantic role of remnants. A remnant must be well structured syntactically and it must be dependent to some verbal projection as remnant cannot be embedded deeply in the gapped clauses without giving rise to ungrammaticality. In order to make sense, the remnants in gapping must have contrast with correlates existing in source.

Adjuncts can appear outside the highest VP keeping in view the presence of VP-shells. There are stranded materials which are not considered adjuncts after ellipses sites. Obligatorily, main verbs chose phrases lexically as post-ellipses site constituents that generate within projection of verbs. Lasnik is of the view that there must be one remnant in gapping as in Pseudogapping construction. A remnant of Pseudogapping must be saturated under the principle that semantic values within the remnant for all elements must be obtainable.

A remnant is considered for its three cases:

- i. Prediction
- ii. Infinitives with PRO subjects
- iii. Anaphors

2.5.3.1 The Remnant with Non-Predicative Nature

Levin (1968) states that a constituent in Pseudogapping that is left behind can be a DP or PP. an AP cannot be remnant other than comparatives.

As noted by (Levin's 2.4.1-7):

6.
 - a. *Rona looked annoyed, but she didn't frustrate.
 - b. *At first the watchdog appeared (to be) friendly, but later on it did ___ferocious.
 - c. Rona looked more annoyed than she did 0 frustrate.
 - d. The watchdog seemed more friendly than it did 0 ferocious.

Through categorial terms remnant can should not be stated unless it is saturated. In sense of Chomsky (1986), a remnant must be Complete functional Complex. Some of the remnants as DPs are non-predicative.

- a. *Although he didn't become a doctor, he did ___a lawyer.

In term of syntactic category there is a restriction on possible remnant in Pseudogapping. That restriction would not assume inaccessibility. *Becomes* as a verb and compliment takes a predicate nominal. Nominal is unsaturated as predicate. The restriction for the remnant to be saturated is over ruled as AP remnant which are unsaturated and predicative.

2.5.3.2 Control Infinitives

Clausal compliments are also notable as remnant in possible Pseudogapping.

7.

- a. Although he wouldn't prefer for Sam to leave, he would __for her to maintain a low profile.

Control infinitives are not considered to be remnants in Pseudogapping.

- b. *Although John didn't try to visit Sam, he did __to visit Susan.
- c. *Although he doesn't want to give a lecture, he does __to visit.

The restriction behind the control infinitive is that it behaves like predicative compliment and negates being a Pseudo-gapped remnant where the notion of saturation needs reference and an argument can't be assigned a semantic value. A control infinitive is referentially dependent which makes it unsaturated. An interesting thing is that after the arbitrary control of PRO subject, the infinitive may become a possible remnant. There is a contrast between the controlled and non-controlled infinitives that makes the difference between the two; one becomes clear by falling from the standard of being saturated. Moreover, an arbitrary controlled PRO must be a pronoun that must be free in its local constraints. A controlled PRO is treated as an anaphor in accordance with A-movement.

2.5.3.3 Anaphors

A remnant must be saturated along with reflexives.

8.

- a. Although Sam didn't take pictures of Sally, she did __pictures of herself.
- b. * Although Rebeca doesn't like Sam, she does __herself.
- c. * Although they don't like Tom and Sally, they do __each other.

It seems after analysis that as remnants reflexives and reciprocals are unacceptable when they are no more able to be analyzed as logophors and become arguments themselves.

2.5.4 Parallelism, Disjoint Reference and Contrastive Focus

Two other notions also exist there one is disjoint reference while the other one is parallelism. Sometimes it is not restricted for remnants to have identical reference to its correlates but parallelism can be made between the remnants and its correlates as sense can be built by making comparison semantically.

- 9. a.*Danish was talking about the delicious food and Hania constantly.
- b. Danish was talking about the delicious food and Hania about the places.

(Rooth, 1992) makes sense about each remnant by comparing it with appropriate alternatives in source clause in the form of correlates. The alternatives mentioned therein are sometimes called contrastive focus. Contrastive focus is discussed with respect to prosodic effects occurring in Gapping. Virtually a number of unbounded remnant phrases with contrastive foci can be dealt in well-structured gapped clauses with some missing

material i.e., finite verb or optionally some other material dependent on that verb. Grammar constraint may not be imposed on remnants and some other missing material to match them with the elements of source clause. Such matches may give birth to ambiguity because there would develop more than one way to establish contrastive focus. (Coppock, 2001) through an illustration describes contrastive focus:

10. John said that he wants Caviar for dinner, and Mary beans.

In (10) contrastive focus applies on Mary with respect to John or he, so here in order to construct focus an ambiguity raises to interpret the missing material in gapped clause. Two possible assumptions may set up:

11.

- a. John said that he wants CAVIAR for dinner and Mary ~~said she wants~~ BEANS ~~for dinner~~.
- b. John said HE wants CAVIAR for dinner and MARY ~~wants~~ BEANS ~~for dinner~~.

One more notion exist there that a gapped clause projecting under complementizer mostly sound ungrammatical through syntactic constraint. Embedded gapped clauses with complementizers possess different semantic properties. The observation given above is specified for English only but same observation may result differently for other languages containing Gapping as it contains *resolution-via-identity* type of fragment. (Park, 2019)

2.5.5 Across the Board (ATB) Movement

The phenomenon of Across-the-Board is mostly defined as a correspondence of one-to-many. Coppock (2001) investigates the hypothesis of deletion for Gapping and check the potential Gaps through a trace of movement. By applying Model of (Johnson 1996) Coppock analyzes that from both conjuncts the verb moves Across the Board(ATB). A coordination between the two VPs is found with full clause and a partial clause. Partial clause is devoid of main verb and possibly some other elements as well. In ATB one constituent as a rule moves out of all the conjuncts. These conjuncts have a coordinate

structure. ATB follows a parallel movement rule which negates CSC (Coordinate Structure Constraints). There is tendency in reduction of backward conjunction and more focus in formation of relative clause. Due to occurrence of relative clauses, a keen observation is required for wh-movement existing in embedded question. Moreover, it favors forward ellipses as conjunction reduction and generates comparative deletion. For standard ellipses ATB with wh-movement is considered most appropriate where forward ellipses become possible with the help of conjunction reduction along with comparative deletion. Wh-object is drawn out at once from two conjoined clausal projection. According to CSC, conjunct from a coordinate structure can't be moved. Further, no element from a conjunct can be moved out of that specific conjunct. But only through parallelism coordinate structure can be subjected keeping into consideration syntactic dependencies. This can be well illustrated through an example:

12.

- a. *Which book* does [John like___] and [Rita hate_____]?
- b. **Which book* does [John like ___] and [Rita hate Moby Dick]?
- c. **Which book* does [John like Moby Dick] and [Rita hate_____]?

The foremost and fronted wh-phrase is *which book* which can be associated to the object position of *like* and *hate* both in both conjuncts to a variable between the brackets mentioned by underscore. In 9b and 9c elision takes place only in one conjunct that negates configuration semantically and symmetrically. It is not necessary that conjuncts must follow parallelism internally with each other in every respect but they may vary according to tense, voice, mood, aspect, position of adjuncts and arguments. Coordinate structures in ATB themselves are not habitual barriers for movement nor they are inherited barriers for grammatical dependencies. ATB is frozen if there is any blockage found in corresponding movement in any singular structure.

13.

- a. **Which book* do you think [a man that likes_____]?

- b. **Which book* do you know [a man that likes____] and [a woman that hates____]?

In a complex noun phrase normally, it is not allowed to extract a relative clause and same is the case in ATB. So, ATB is not merely an exception to constraints applied on movement instead it follows a strong grammar capacity to exhibit similar relationship by developing coordination.

14. John likes, and Rita hates *this place*.

(Akahane, 1997) refers to the work of Ross (1967) and Postal (1974) that rightward ATB movement is conceived in such constructions contrary to backward ellipses. ATB phenomenon is generally following one-to-many correspondences that means; one operator licenses two or more variables where grammar allows it to happen either it contradicts with simple principle of bijection. ATB in broad sense, is a relationship of one-to-many and many-to-one. ATB precisely analyze the theory which encompass leftward movement from more than one conjunct. In head movement there is no clear limitations and restrictions in accordance with categorial status. A number of extractions are possible from subordinate contexts. Moreover, it relies on gap configuration. from forward and backward perspective, ellipses share some of the properties with ATB extraction. There is an involvement of multiple dependencies after binding of pronouns through which a split antecedent phenomenon generates and multiple conjuncts are targeted by case and agreement.

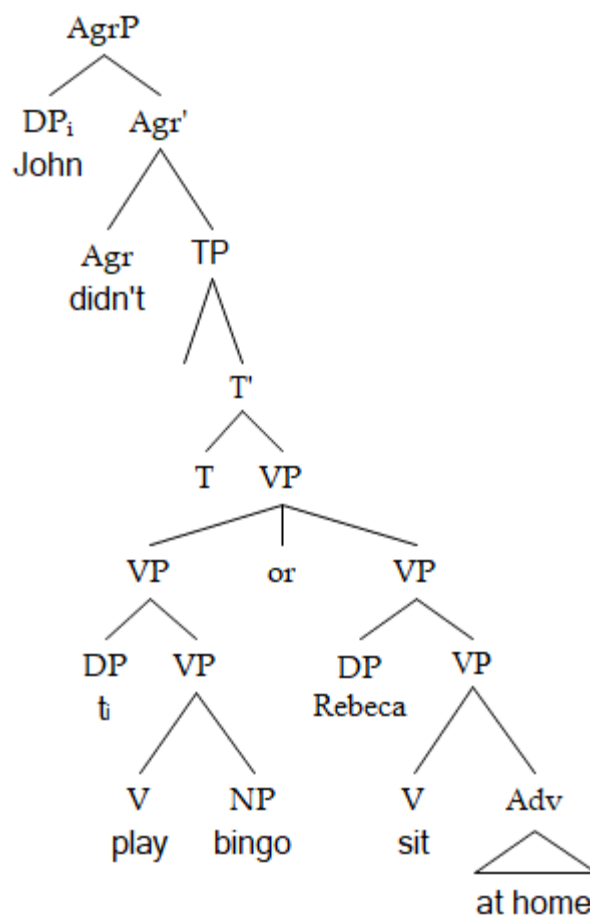
ATB was initially considered as an exception to the constraints of coordinate structure. It was assumed that CSC cannot be dealt as part of syntax so no syntactic island structure could be inherited. At the level of semantically asymmetric coordination no longer remained exception to this constraint. CSC with its rest of effects met with requirement of symmetrical coordination having semantic effects. All the structures reside with all possible extraction from all conjuncts. First and last conjuncts with antecedents are saved by forward and backward ellipses. Inside a coordination phrase, the demand of

binding of pronouns does not exist. ATB remains complex to explain extraction in the environment of transformational framework. Sometimes a co-referent operator is involved in a gape and first base position is admitted real for movement.

15.

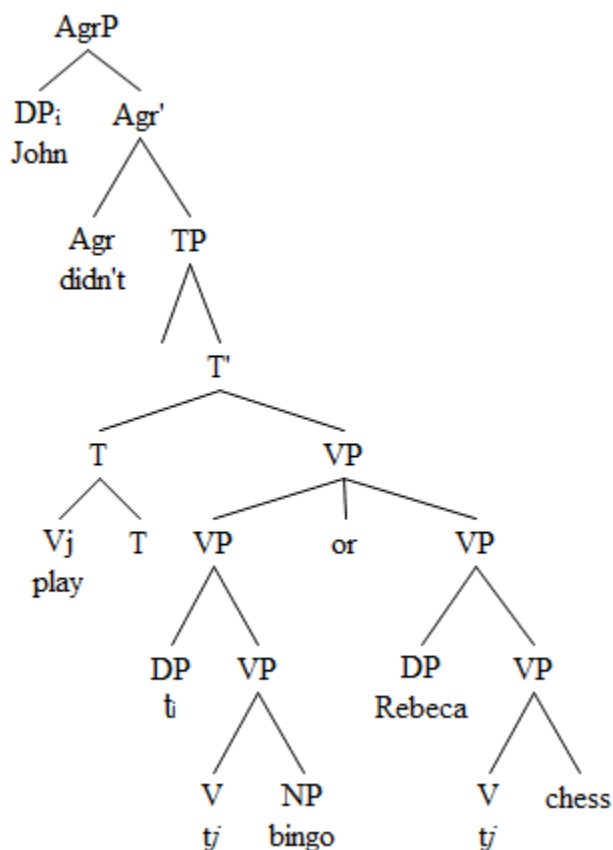
- a. John didn't play bingo or Rebeca sit at home all evening.
- b. John didn't play bingo or Rebeca chess.

15a and b are different just for gapped auxiliary in 15a whereas 15b contains a gapped auxiliary and a gapped verb as well. Auxiliary appears with a vast scope over a conjunction with a separate action semantically. 12a follows following structure:



[AgrP [DP_i John] [Agr' [Agr didn't] [TP [] [T' [T] [VP [VP [DP t_i] [VP [V play] [NP bingo]]] [or] [VP [DP Rebeca] [VP [V sit] [Adv at home]]]]]]]]]]

In 12a both auxiliaries and verbs which are missing and they are licensed by moving the verb out of both conjuncts in an ATB trend.



[AgrP [DP_i John] [Agr' [Agr didn't] [TP [] [T' [T [V_j play] [T] [VP [VP [DP t_i] [VP [V t_j] [NP bingo]]] [or] [VP [DP Rebeca] [VP [V t_j] [chess]]]]]]]]]]

Example 15b split scop analysis for negative determiners is adopted where at higher sentential negation level, determiners are decomposed through ATB movement.

2.5.6 Gapping vs. VP Ellipsis

Coppock illustrates how VP Ellipsis and Gapping differ from each other regarding deletion. He presents some empirical differences by referring Johnson with evidences against an analysis of deletion (Coppock, 2001). It is noted that under specific circumstances through VP Ellipsis, antecedent may be found from unpronounced verbal context but for Gapping it is not so. Same is the case with Pseudogapping and Sluicing. So, VP Ellipsis allows non-linguistic antecedents.(Johnson 1996)

This feature can better be understood by the following illustration mentioned by Coppock:(Hankamer & Sag, 1976)

a. [Hankamer brandishes cleaver, advances on Sag]

Sag: Don't! My god, don't! (Hankamer & Sag 1976, note 19:409)

b. [Hankamer produces an orange, proceeds to peel it, and just as Sag produces an apple,says:]

#And Ivan, an apple. (ibid. p. 410)

c. [same context] #And Ivan is, an apple. [Hankamer produces a gun, points it offstage and fires, whereupon a scream is heard] Sag: #Jesus, I wonder who. (ibid p.408)

[copied from (Coppock, 2001; Hankamer & Sag, 1976)

There exists mismatch between the elided phrases and the antecedents. On the other hand, gapping is not so. For Sluicing, it is impossible while for Pseudogapping it is marginal.(Coppock, 2001)

There is no backward anaphora in Gapping (b) and Pseudogapping (c) while it is found in VP Ellipsis (a) and Sluicing (d):

16.

- a. Sue didn't but John meat. (Lobeck 1995)
- b. *Sue didn't the lamb but John will have the salmon.
- c. *Sue will, the lamb, and John will have the salmon.
- d. I don't know what, but John will have something.

For the construction of VP Ellipsis (a), subordinating conjunctions can conjoin the elided clauses and antecedents. Same is with both Pseudogapping(c) and Sluicing (d) while Gapping construction cannot be so (b).

17.

- a. John will have caviar although others won't.
- b. *John will have caviar although others beans.
- c. John will have caviar although others will beans.
- d. John will have something, although I don't know what.

There are specific subordinating conjunctions which can conjoin VP s but subordinating conjunctions like although cannot conjoin VPs but only coordinating conjunctions can do so.

The response to Johnson s concerns identify that the gapped clause with no pronounced verbal material is a VP which needs to be believed. Johnsons elaborates that gapped clause is comparatively smaller than IP.

2.6 Morphology of Urdu Auxiliaries in a VP String of Urdu Axiom

Urdu is a head-final language having complex verbs. The verbs which are morphologically and lexically complex are very difficult to examine in head-final languages. Any head movement can result a vacuous type of string. In Syntax, hardly direct proofs or evidences can be found for head movement of verbs just like Urdu language. Sometimes verb movement takes place out of vP but it is not necessary all the time. Urdu contains a pattern of complex predicate construction and exhibits a unified phenomenon regarding head movement meanwhile developing V-stranding VPE as a critical tool to investigate Urdu as verb final language. String-vacuous develops when any head movement occurs or functions as Urdu contains complex verbs with rigid ordered string containing comprising a verb with a number of aspectual and tense auxiliaries. A single predicating unit is formed through assembling nouns, adjectives and verbs with a substantial list or inventory of light verbs. The final complex predicate gets considerable attention regarding analytical and descriptive way (Niazi, 2018).

There is a need to discuss morphological patterns and process of construction of main verbs in Urdu simple, compound and complex sentences. It describes the process that how a change in one form also brings into other. A complex predicate in Urdu may comprised of multiple verbs altogether. These complex predicates are affected differently with respect to its Tense and Aspect. There is a need to go into the complexities of Urdu auxiliaries as it is observed that main verbs in Urdu are assisted by auxiliaries but auxiliaries cannot be replaced by main verb. So, difference with respect to English predicates lies here. Each Auxiliary in Urdu plays its distinctive and specific function (Ansari, 2023). Urdu verbs are of following types:

i. **Compound Verbs (Main Verb + Aux or noun/adj + Main Verb)**

Compound verb is a combination of V1 (Polar Verb) and V2 (Vector Verb)

a. **Polar Verb (V1)**

Semantically it has more contribution as compare to V2 in a compound verb.

b. Vector Verb (V2)

Semantically V2 in a compound verb is seems to be light and it changes its meaning when it is combined with V1. V2 gets inflected with agreement, tense, aspect and behaves as an auxiliary.

c. Light Verb

In Urdu light Verbs are different from the aspectual verbs. A light verb must be acceptable to well-match verbs. For example, the light verb **چل** doesn't suit with the verb **رک** instead it is most suitable and acceptable with **چل**.

ii. Complex Predicates

Predicates in Urdu are further divided into three categories:

a. Simple Predicate

b. Complex Predicate

The core meaning of the predicate originates from the first predicate entitled as noun, verb or adjective. Second predicate is commonly listed for light verb and gets inflection regarding tense, number gender in a clause i.e., **مردے**.

c. Even Predicate

2.6.1 Categories of Urdu Auxiliaries

There are various morphological forms of auxiliaries in Urdu and they behave in a very different way in contrast to English auxiliaries. There is inflection in morphological regular ending of Urdu auxiliaries with respect to number, gender, person, aspect and mood (Mushtaq, 2022). The main categorization of Urdu Auxiliaries is as under:

- i. Perfective
- ii. Imperative
- iii. Infinitive

2.6.2 Tense Aspect system and Aspectual verbs in Urdu

In connection with some auxiliaries and aspectual verbs, only a little morphology can be found in Urdu. Tense aspect system in Urdu is somewhat complex. Tense(time) in Urdu describes a temporal relation where a speaker finds himself, while Aspect (point of view or perspective) is understood through the way in which something is said (Niazi, 2018). Urdu is considered mainly for three significant point of times:

At which something is said (Speech Time S)

To which the spoken words are referred to (Reference time R)

At which the event spoken about occurred (Event time E)

Transitive, unergative and accusative verbs in Urdu are constructed with some variation through f-structure instead of c-structure. As per LFG (lexical Functional Grammar), two levels of representations are there, one is c-structure (Constituent Structure) and the other one is f-structure (Functional Structure). A c-structure is dealt as phrase structure tree while f-structure deals with attribute value matrix.

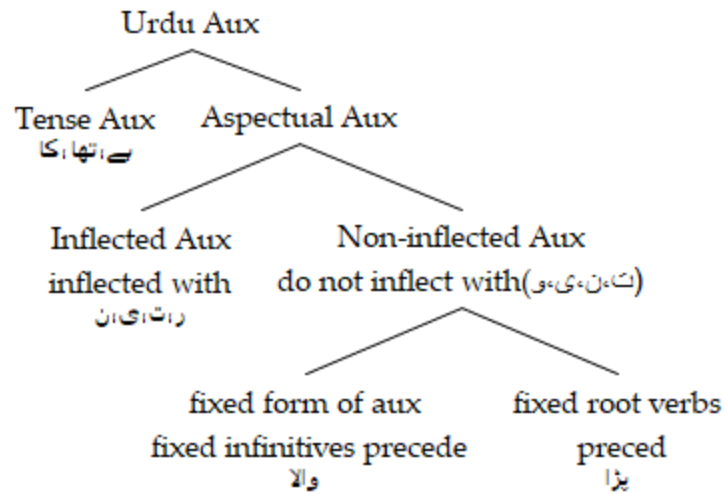
‘Aspect’ is actually a structure of some action or event with reference to time. It shows a temporal character of event and it confirms either an action is complete, progressive or recurring. Mainly the factor predictability is associated with auxiliary verb or vector verb to show the difference (Humayoun et al., 2022). Grammatical aspects in Urdu are of three types:

- i. Habitual
- ii. Progressive
- iii. Perfective

2.6.3 Syntactic Analysis to bring into light the Restrictions within Auxiliary Phrases of Urdu

Word formation in Urdu is a complex process which involves variety of morpho-syntactic and morphological processes. For various grammatical classifications words inflect as number, gender, tense, person and case. Through Word-Phrase approach it is accepted that there are inflectional and derivational components in any language (Matthews, 1965). Words in Urdu are formed through inflectional processes which play a significant role in the formation of new verbs.

- i. Verb and Tense Auxiliary
- ii. Verb, Aspectual and Tense auxiliary
- iii. Verb, Multiple Aspectual Auxiliaries and Tense Auxiliaries



2.7 Research Gap

Several studies (Landau, 2020; Park, 2019; Manetta, 2018a; Erschler, 2016; Gribanova & Manetta, 2016; Kubota & Levine, 2016, 2016; Coppock, 2001; Morrill, 1993; Morrill & Solias, 1993; Gardent, 1992) have been conducted on occurrence of gapping and ellipses in English with all possible variants in the context of Hybrid-Type-logical Categorical Grammar. Urdu language has been analyzed by a number of scholars through paradigmatic set of patterns, morpho-syntactic and morphotactic processes (Khattak, A.,

Asghar, M. Z., Saeed, A., Hameed, I. A., Hassan, S. A., & Ahmad, S. 2021). However, Urdu complex predicates have not been analyzed through the lens of Hybrid-Type-Logical Grammar in order to authenticate the occurrences of all possible variants of Gapping. It is generally believed that Urdu functions syntactically parallel to English while it has morphological restrictions which hold Urdu language from adopting parallel morpho-syntactic features of English (Ansari, N. A., & Mangrio, R. 2019). Ellipses and gapping are unique aspects that analyze the potential for extraction/exemption/elision of elements from phrases or clauses. Elided constituents get some logical abstraction level where they reside either at surface level or they remain unpronounced. Abstraction level of the elided clauses in Urdu axioms behaves differently from those of English Axioms. The purpose of this research is to identify the instances of logical ellipsis in embedded clauses in Urdu. The possibility of missing verb and noun phrases in formal embedded axioms in Urdu has been explored by the researcher. Through variants of categorial grammar in Gapping, such as: pseudogapping, sluicing, VP-ellipsis and nominal ellipsis, the potential for phrases to go missing in Urdu propositions is measured.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the methodology that was used in the study. This chapter has been divided into sections to define the procedure used on Urdu embedded gapped axioms to determine the validity or possibility of variants of gapping into verb or noun phrases. The first section provides theoretical framework as a lens through which data has been analysed. The second section discusses research paradigms that classify research types, how data has been analyzed, the proposed type of sampling for data collection, dependent and independent variables and the methods and procedures for data analysis. It also describes ethical considerations employed in the data collection.

3.1 Theoretical framework

Theoretical Framework for this study has been formalized within the theory of Transformational Grammar (Chomsky,1950). TG refers to a grammatical theory that contends that sentences often feature more than one tier of structure. It has an overt structure on the surface, but also an abstract underlying structure (the deep structure) that may be quite different. To Chomsky, this is all about how much simpler it is to assert certain essential generalisations about the constructions of the sentences in a language in terms of abstract deep structures, and how much simpler it is to deduce the meaning of a phrase from its deep structure. Transformational Grammar Theory accepted changes into its framework and led to form of Extended standard Theory under Minimalist Approach (Chomsky,1950). Minimalist program is a perspective which emerges from the work of Noam Chomsky and it deals with the most prominent features of linguistic complexity in hierarchical form including the distinction between a finite-state grammar and complicated categories of phrase structure grammar (Retoré & Signes, 2010). The generative capacity of minimalist grammars having shortest move, is equal to context free linear rewriting system (Michaelis, 2001). Through lexical items categorical grammar defines a finite set

of categories (propositional logical formulae). Categorical minimalist grammar refers logical calculus with provision of elimination rule which requires axioms and variables. Categorical Grammar proves ellipsis and gapping logical and acceptable for a language with the occurrence of abstraction. This generated language extends its definition under Lambek's grammar. The meanings of natural language sentences can be understood by Lambek's grammar, which is a mathematical framework that gives compositional semantics. It consists of a computational technique for building meanings of sentences, given their grammatical structure in terms of compositional type-logic, as well as given the empirically derived meanings of the words that comprise those sentences. Lambek's grammar is a grammatical inference that is referred to as the syntactic concept structure. It is an algebraic structure that is ontologically constructed for any language and is dependent on the structure of all distributionally definable subsets of strings. This algebraic structure gave birth to logical approach. The logical approach made use of the techniques of mathematical logic and brought categorical grammars within the framework of substructural logic. The computational approach places an emphasis on the practical relevance to natural language processing and positions categorical grammars within the context of extensible rewriting systems. Brannon (2005) is of the view that computational recursion is generated with an amalgamation of language and mathematics to construct a logical syntax to make some constituent independent giving possible reasoning along with acceptable meaning. Gapping or Ellipses is a variant of categorical grammar dealt under Hybrid Type-Logical Categorical Grammar (Kubota & Levine, 2016) which allow to generate finite set of propositions through connectives

For the purposes of this research, the lens that has been used to investigate the frequency of occurrence of gapping in Urdu axioms with gapping, is developed within the context of transformational grammar and the minimalist approach. Primarily Johnson's framework has been applied to analyse the data as it is framed under Minimalist work, formulated as a variant of Categorical Grammar (CG) called Hybrid Type-Logical Categorical Grammar (Kubota & Levine, 2016), It incorporates research in modelling word order using a lambda calculus for the articulatory or prosodic component, building on both

the Lambek-inspired forms of CG (Moortgat1997; Lambek1958; Morill 1994). (Oehrle et al., 2012). Gapping can be analysed as like-category synchronisation at the combinatoric level enabling one to the versatile syntax-semantics interface of this framework, and the discrepancy between the hidden structure and the visible string is mediated by fictitious reasoning involving lambda binding inside the prosodic component. It unquestionably prevents the researcher from unfavorable structural asymmetries that can impair the examination of the poor VP coordination between the two conjuncts. The Gapping in a Phrase Structure Grammar (PSG) paradigm encased in GPSG, considers gapped conjuncts to be unstructured strings of residual components, and offers only hazy hypotheses to observe an interpretation for the gapped conjuncts to be generated based on its putatively full-clause sister. A further explanation of PSG, known as Construction-based Head Phrase Structure Grammar (HPSG), which makes use of Dalrymple's higher order unification method, provides virtually the same analysis but does so in a manner that is more open to semantic interpretation (1991). However, when Kubota and Levine's procedures are taken into consideration, it becomes clear that neither of these approaches is able to generate, at the very least, a relatively straightforward investigation of the scope of the Gapping phenomenon. In order to concentrate on the transformative analytical thread starting with Johnson, one can do so by using this framework (2004).

3.2 Research Design

It is qualitative research and follows deductive approach. Data has been collected from Urdu language and analyzed in comparison to English language by applying basic syntactic patterns of Gapping and Hybrid Type-Logical Categorical Grammar. Results are measured and analyzed descriptively. A detailed description with logical operations and proofs, such as: results, conclusions and future recommendations are drawn in order to fulfill the requirements and meet the set objectives.

3.2.1 Data Set for This Study

This study is based on content analysis. In order to collect the data initially on an individual and household level, a method called purposive sampling has been implemented. Through purposive sampling approximately forty Urdu compound and complex sentences have been selected on an individual and household level to apply four major variants of gapping. An individual and household levels are the contexts of academic and social circles from where the data has been collected by observations. The selected Urdu gapped compound and complex axioms were comprised of ellipses/contractions in which one of the conjuncts has been contracted with respect to another conjunct. The researcher has collected Urdu axioms with gapped clauses which are frequently used in different contexts; conversations between teachers and students (specifically at Sir Syed Girls High School, Taxila), a number of talks between faculty members of Urdu department at SSGHS, Taxila and get-togethers with families. In order to collect the data, observations carried on continuously for two months. Due to time limitations The Researcher selected most appropriate frequently used following Urdu axioms with gapped clauses for data analysis:

- 1 ہادی: تم نے کبھی کسی سے جھوٹ بولا؟
نور: بولا۔
- 2 علی: کیا تم اسکوکل کتاب دو گے۔
سعد: ہاں دوں گا۔ (میں اسکوکل کتاب)
- 3 سعد: ہاں۔ (میں اسکوکل کتاب دوں گا)
- 4 علی کھاتا چلا جا رہا ہے اور شان بیٹا۔ (چلا جا رہا ہے۔)
- 5 سعد کھاتا ہے۔
- 6 سعد کھاتا ہے اور علی بھی۔
- 7 حادیہ نے ایک نئی کار خریدی تھی اور رابعہ نے بھی۔

- حادیہ نے ایک نئی کار خریدی تھی، رابعہ نے بھی۔
- 8 سعد کھاتا رہتا ہے اور علی بھی۔
- 9 ردا (کھانا) بنا رہی ہے۔
- 10 فاطمہ گاسکتی ہے لیکن فارینہ Ø نہیں۔
- 11 فاطمہ گاسکتی ہے لیکن فارینہ نہیں Ø -
- 12 فرید نے کچھ خرید لیکن مجھے پتہ نہیں کہ کیا۔
- 13 فرید نے کچھ خرید لیکن مجھے پتہ نہیں کہ اس نے کیا خریدا۔
- 14 اس نے یہاں کسی کو دیکھا۔
- 15 پر اسے نہیں پتا، کس کو۔
- 16 ردا نے کس کو سوچا کہ فرید نے دیکھا۔
- 17 تم کس کو سوچتے ہو کہ آئے گا۔
- 18 میں نے یہاں کسی کو دیکھا، پر مجھے نہیں پتہ کس کو۔
- 19 کسی نے فاطمہ کو دیکھا لیکن مجھے نہیں پتہ کس نے۔
- 20 فاطمہ کھانا پکا رہی ہے پر فراز کو نہیں پتا کہ کس کے لیے۔
- 21 فرید کوئی کتاب خریدنا چاہتا ہے، ہمیں نہیں پتا کونسی فرید خریدنا چاہتا ہے۔
- 22 کیا سلمان کو تاریخ پڑھنا پسند ہے یا کہ جغرافیہ بھی اسکو پڑھنا پسند ہے؟
- 23 کیا تم نے فراز کے لیے کھانا بنایا یا کہ فرید کے لیے؟

Selected data was taken to be approved by Urdu scholars at NUML University in order to measure and check their authenticity, grammatical accuracy and acceptability around the society.

3.2.2 Research Method

It is a Content Analysis based proposed methodology which measures occurrence of Gapping in a variant of Categorical Grammar (CG) called Hybrid Type-Logical Grammar (TLCG) to be applied on Urdu compound and complex clauses with missing constituents in one of the conjuncts. Hybrid type-logical grammars are an extension of lambda grammars that incorporate ideas from the Lambek calculus. Data has been generalized, evaluated or analyzed with proposed methodology formulated through frameworks of Johnson (1996, 2009) and Lambek (1958). Categorical Grammar and Hybrid Type-Logical Categorical Grammar are taken as independent variables while Gapping and Ellipsis (VP coordination and Remnant movement) are taken as dependent variables to find Gapping in Urdu complex embedded gapped sentence. This hybrid framework enables the Researcher to find potential of phrases to go missing in Urdu compound and complex clauses with two or more than two conjuncts. The proposed methodology finds Gapping occurring inside the clauses of Urdu language. Further, it is assumed that a blend of two frameworks would help to find occurrence of possible logical ellipsis in embedded clauses/propositions/axioms of Urdu language. The researcher has tried to analyze formal Urdu embedded clauses/propositions/axioms and the potential of its verb and noun phrases to go missing. Through variants of categorial grammar in Gapping like Pseudo gapping, sluicing, stripping, VP-Ellipsis and Nominal Ellipses, potential for phrases to go missing in Urdu propositions, have been measured.

3.2.3 Data Analysis

The collected data has been analyzed through application of Johnsons' and Lambek's framework by application of divulging tests. To find the occurrences of gapping with all its major variants and subvariants, logical operators were applied along with syntactic configuration to construct and examine meaning-making process. Analysis of Head-Stranding Ellipses was made by applying divulging Verb-Stranding Ellipses in Urdu Sentences Outside VP-layer. Syntactic tree diagrams of Urdu Elided Sentences were constructed in contrast to English through X-bar Theory by applying Government Binding

Theory (Minimalist Approach) as Urdu auxiliaries exhibit multiple connections and combinations with main verbs that could only be unveiled through syntactic constructions. Syntactic constraints were described through tree diagrams which put restrictions on co-existence of a number of forms of verbs and auxiliaries. Through Hybrid Type-Logical Categorical Grammar, the occurrence or non-occurrence of Pseudo gapping in Urdu gapped clauses was found. The logical reasoning in meaning-making process was generated by applying variants of Gapping; Sluicing and Stripping. In order to measure the potential for meaning-making process for gapped clauses and find occurrences of possible variants of gapping, a logical approach was adopted to bring more authenticity in findings.

CHAPTER 4

DATA ANALYSIS

Chapter Four analyses the collected data and classifies all diagnoses into sections. The first section examines head-stranded ellipses by constructing generalizations on their bases using divulging verb-stranding ellipses in Urdu embedded axioms outside the VP layer. Section two constructs tree diagrams of Urdu elided axioms through the verbal structure and functionality of VVPE in contrast to English elided clauses through the X-bar theory, in which further omissions of internal arguments are found through logical operators and schematized configurations. Section 2 uses hybrid type-logic categorical grammar to find occurrences of Pseudogapping as pseudo-VP ellipsis in Urdu axioms and operationalizes data to build anaphoric mechanisms to retrieve missing meaning in gapped clauses and generate the logical existence or non-existence of remnant in Urdu. In section 3, Urdu axioms are analysed from the perspective of two further variants to prove the validity of sluiced clauses in Urdu. Section four finds restrictions for the application of the fourth variant of gapping (stripping) at Urdu axioms. The fifth section elaborates on all findings after the operationalization of the data. The final section provides discussion by providing a brief summary of the findings as well as a comparison and contrast of previous works with the findings of the current study in order to highlight the contribution of this study while making some recommendations for future research.

4.1 Analysis of Head-Stranding Ellipses by Applying Divulging Verb-Stranding Ellipses in Urdu Sentences Outside vP-layer

A stranded verb in Urdu has been identified where verb is found to be stranded just outer layer of ellipsis site in which it generated. In Urdu a stranding verb can be realized through its position and the timing of movement. But a phase-based license is required to apply any condition for verb stranding analysis. Stranding verb in Urdu clauses can be examined in argument ellipses where the main verb is found to be strand.

Head -Stranding Ellipses operation is used to find either the head of a phrase is found under movement out of that phrase. Further, this test will find whether the phrase itself is then elided or not or it is stranding the head. Specifically, it will evaluate the occurrence of ellipses where a verb is a head as stranded. Following example from Urdu features verb-stranding ellipses along with subject pronominal drop means that whole clause of the responder is reduced to the verb alone.

1. Hadi: Tum=ne Kabhi kisi=se jhoot bol-aa?
 SG=ERG ever someone=OBL lie tell-PRF.M.SG
 “Have you ever lied to someone?
 Noor: bol-aa!
 Do-PRF.MSG
 ‘Did!’ =’~~I have lied to someone.!~~’

24 ہادی: تم نے کبھی کسی سے جھوٹ بولا؟

نور: بولا۔

Following generalizations are constructed through above mentioned gapped clause:

4.1.1 Generalization No. 1

Above example from Urdu features verb-stranding ellipses along with subject pronominal drop means that whole clause of the responder is reduced to the verb alone. Verb in verb-stranding VPE moves out of a verb phrase at a higher head which causes an ellipses of verb phrase while vp internal substances or constituents remain same and verb strands itself.



Tree Diagram 1(Schematized): [XP [X][vp [v][VP [V][]]]]

4.1.2 Generalization No. 2: An Elided Argument

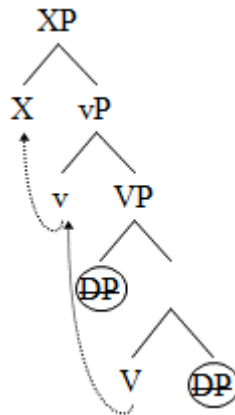
Urdu allows null pronominals for various objects. So, by eliding separate alone arguments of the verb, it features Argument Ellipsis by generating verb-stranding string and allows DP argument go missing.

2. Ali: Will you give him a book tomorrow?

علی: کیا تم اسکو کل کتاب دو گے۔

Saad: Yes, I will. (~~give him a book~~)

سعد: ہاں دوں گا۔ (میں اسکو کل کتاب)



Tree Diagram 2(Schematized): [XP [X][vP [v][VP [DP][[V][DP]]]]]

4.1.3 Generalization no. 3 An Elided TP (Tense Phrase)

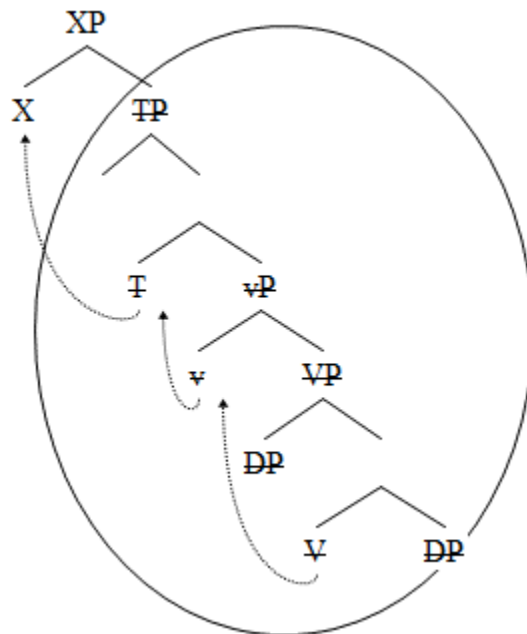
An elided argument is also revealed in verb phrase ellipses of a clause-sized constituent where verb has moved out of it.

3. Ali: Will you give him a book tomorrow?

علی: کیا تم اسکو کل کتاب دو گے۔

Saad: Yes. (I will give him a book)

سعد: ہاں۔ (میں اسکو کل کتاب دوں گا)



Tree Diagram 3(Schematized): [XP [X][TP [[T][vP [v][VP [DP][[V][DP]]]]]]]

The above-mentioned Argument and Tense Phrases ellipsis tree diagrams authenticate that there is a battery of syntactic diagnostics to identify creation of verb-stranding VPE/TPE.

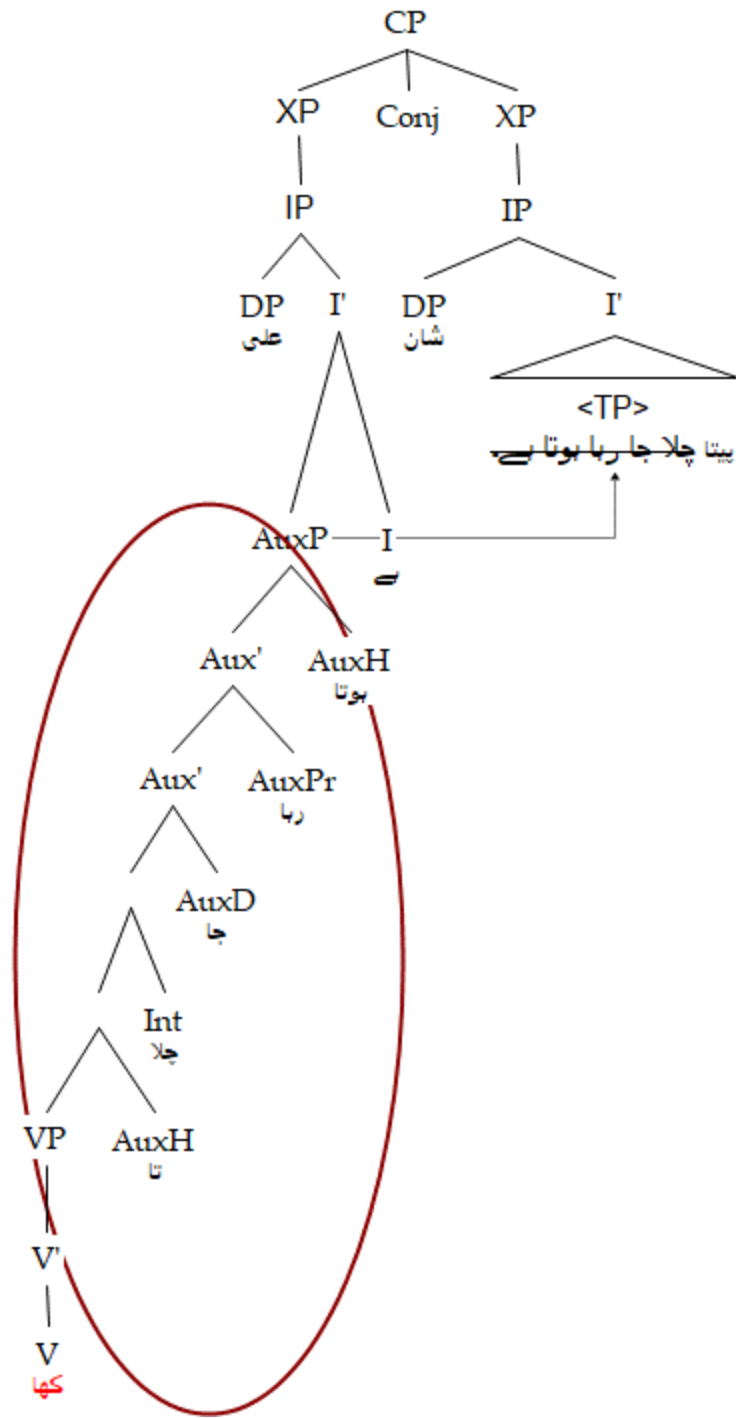
4.1.4 Generalization no. 4 The Movement of Composite Aux-T Head to C

Tensed verb in Urdu moves to the head C where auxiliary and main verb behave in composite way and move as well.

4.

a. When main verb moves to C

علی کھاتا چلا جا رہا ہوتا ہے اور شان پیتا۔ (چلا جا رہا ہوتا ہے۔)

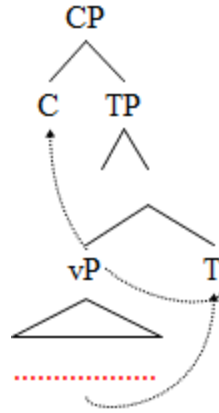


[CP [XP [IP [DP علی]I'

[AuxP [Aux' [Aux' [[[VP [V' [V کھا]]]AuxH تا]][Int چلا]][AuxD جا]][AuxPr رہا]][AuxH ہوتا]][I ہے]]]][Conj]][XP [IP [DP شان]I' <TP>

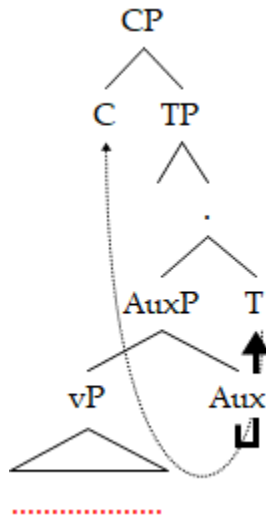
]]]] پیتا چلا جا رہا ہوتا ہے۔

b.



Tree Diagram 4b(Schematized): [CP [C] [TP [] [[vP] [T]]]]

c. When auxiliary verb moves to C

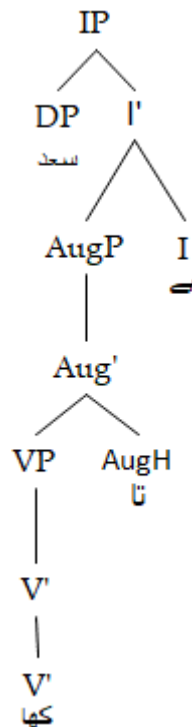


Tree Diagram 4c(Schematized): [CP [C] [TP [[AuxP [vP Aux]] [T]]]]

4.2 Construction of Syntactic Tree Diagrams of Urdu Elided Sentences in Contrast to English through X-bar Theory

In English the place of Verbs remain same from simple to complex grammatical structure. Contrary to English, in Urdu language Vs take ending syntactic position in a sentence. By dropping the tense auxiliaries in Urdu, sentence cannot convey its complete sense or meaning moreover, they become ungrammatical. It happens mostly in habitual and progressive sentences of Urdu. Urdu auxiliaries exhibit multiple connections and combinations with main verbs that can only be unveiled through syntactic constructions.

Syntactic Constraints are described through tree diagrams which put restrictions on co-existence of a number of forms of verbs and auxiliaries. These diagrams show that how a number of auxiliaries occupy same syntactic place or position on syntactic tree.

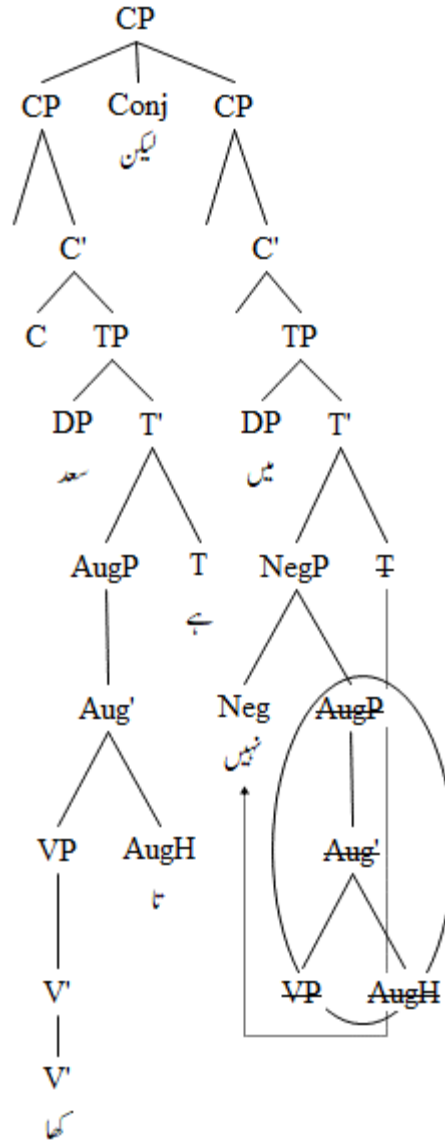


Tree Diagram 5(Schematized): [IP [DP سعد]][I' [AugP [sAug' [VP [V' [V' کھا]]]][AugH تا]]] [I ہے]]

Tree Diagram 6: Representation of Main verb and a tense auxiliary in an elided form in a compound Urdu Axiom by applying Residuation law

5. X : A | X : A

سعد کھاتا ہے لیکن میں نہیں۔



[CP [CP []][C' [C]][TP [DP سعد][T' [AuxP [Aux' [VP [V' [V' کھا]]]][AuxH تا]]]][T ہے]]]][Conj لیکن][CP []][C' []][TP [DP میں][T' [NegP [Neg نہیں][AuxP [Aux' [VP [V' [V]]]][AuxH]]]][T]]]]]

Movement Based Analysis: $\neg(\text{Any Axiom}) \diamond(\text{XP}) \geq(\text{Conj}) \wedge(\text{Remnant})$

Both Diagrams 6(a), (b) inform about the inflectional auxiliary تا in Urdu axioms. The case in elided verb or auxiliary, English sentences are different. In Urdu axioms negative phrase does not project under Auxiliary Phrase or Tense Phrase instead it becomes daughter to TP and sister to Auxiliary Phrase. Contrary to Urdu, English Negative Phrase must be governed by Tense Node and must be in daughter relation with it. While Residuation law in logical calculus way allows Negative Phrase in Urdu axiom to be separated and exist alone as remnant and generates a gapped clause containing Ellipses.

4.2.1 Omission of Internal Arguments

To form a single composite predicate with a single set of arguments, the procedure in Urdu is particularly rich in the amalgamation of Light verbs, which may be joined with verbal, nominal, and adjectival components.

The counterpart of the traditional VPE in English, in which the primary verb and its internal arguments are deleted, leaving just an auxiliary verb, is not permitted in Urdu.

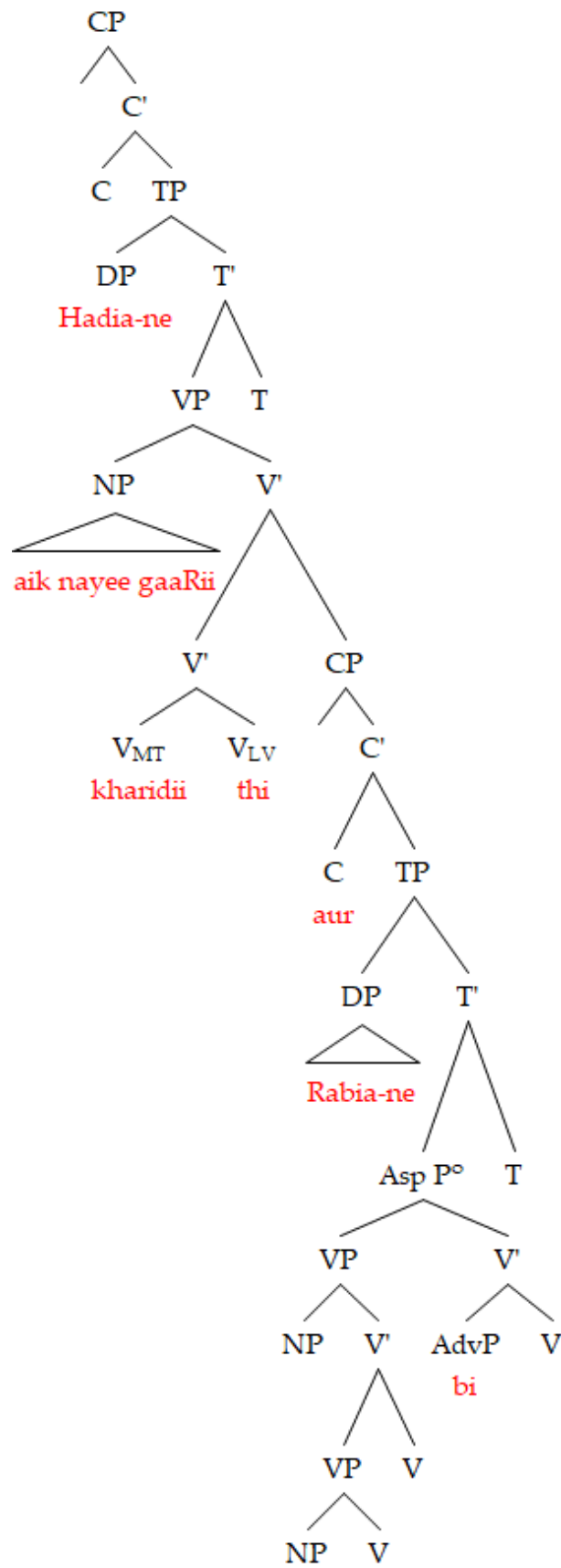
6.

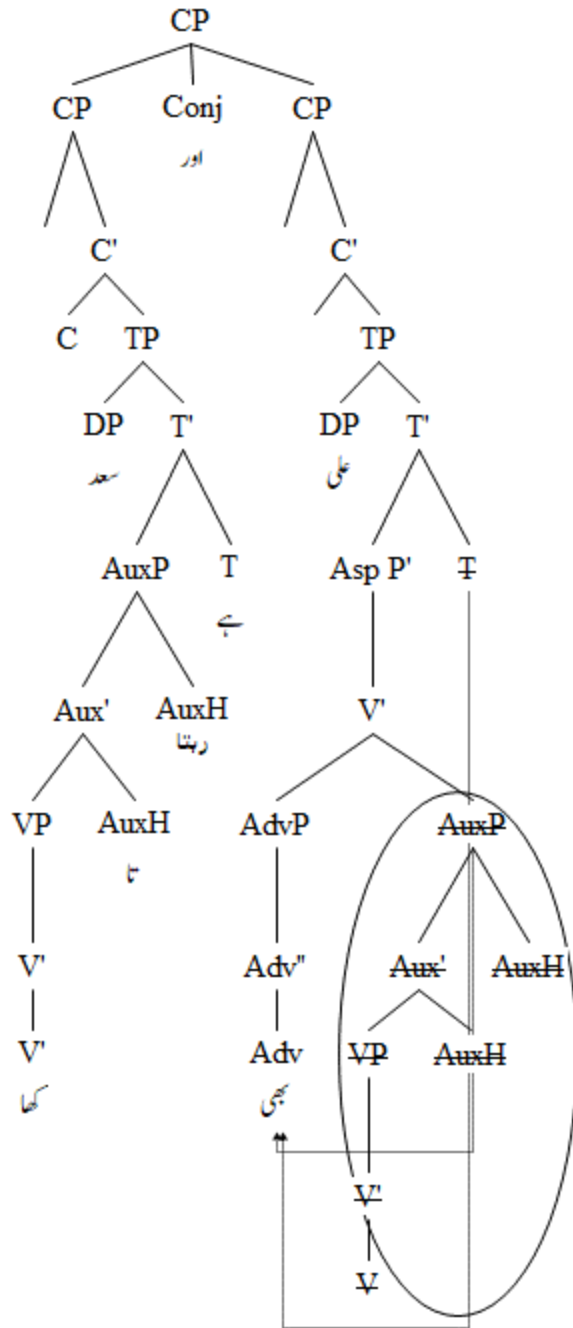
- a. Hadia had bought a new car and Rabia did too.
- b. Hadia ne nayee gaaRi kharidii thii aur Rabia ne bi.

7b. حادیہ نے ایک نئی کار خریدی تھی اور رابعہ نے بھی۔

7. Hadia bought a new car and Rabia did too (buy a new car).

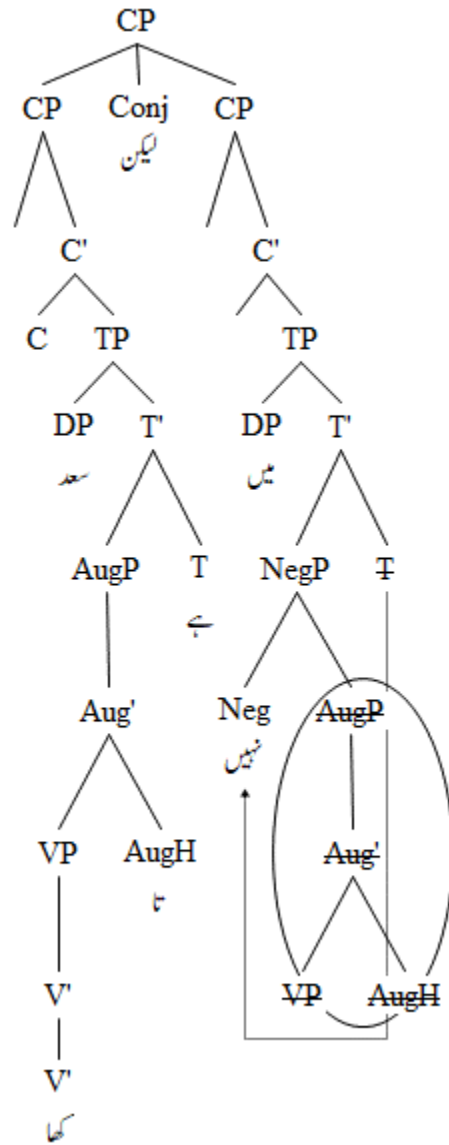
To bring the remnant under Binding Domain, both clauses must project from single CP through logical C-Command.





Schematized 9(a): [CP [CP []][C' [C]][TP [DP سعد]][T' [AuxP [Aux' [VP [V' [V' [کھا]]]][AuxH تا]]] [AuxH رہتا]] [T ہے]]]] [Conj and] [CP []][C' []][TP [DP علی]][T' [Asp P' [V' [AdvP [Adv'' [Adv بھی]]]][AuxP [Aux' [VP [V' [V]]]][AuxH]]] [AuxH]]]][T]]]]]

Since the primary verb in Urdu is not in the verbal stratum at the moment of ellipses, it cannot be omitted using VPE, as suggested by the sentence in 9(a). Therefore, it makes perfect sense that Urdu would exhibit a particular form of verb phrase ellipses, which is also referred to as verb-stranding, verb-phrase ellipses, or VVPE for short. After the primary verb is considered to move outside the vP, the vP in its entirety is eliminated in this variation of the language.



[CP [CP []][C' [C]][TP [DP سعد]][T' [AugP [Aug' [VP [V' [V' کہا]]]][AugH تا]]]][T
 ہے]]]][Conj لیکن]][CP []][C' []][TP [DP میں]][T' [NegP [Neg نہیں]][AugP [Aug' [VP]][AugH
]]]][T]]]]]]

4.2.2 The Verbal Structure and the Function of VVPE

The Urdu verbal complexity is tightly ordered and clause-final. It is made up of a main verb, a light verb, and a variety of auxiliaries; main verb (light verb) (passive aux) (aspectual morphology/aux) (tense aux)

Any verb movement in a normal Urdu phrase would be string-vacuous since the verbal complex's heads all appear to the right. The inflected verb, aspectual affixes/auxiliaries, and tense auxiliaries cannot normally be separated by any sort of displacement, however they can be displaced as a unit. This is a well-known fact about the verbal complex in Urdu.

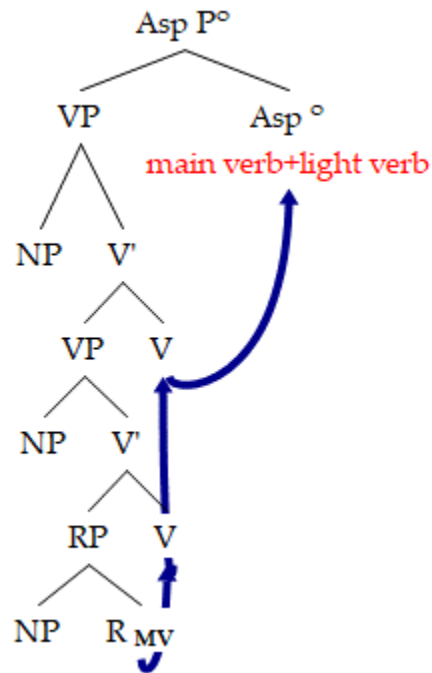
9.

a. Rida is cooking food.

a. ردا کھانا بنا رہی ہے۔

b. Rida khana bnaa rahii he.

The tree below schematizes an explanation of VVPE in V-V complex predicates, where V-to-Asp0 (or, in fact, R-to-Asp0) is common in Urdu.



4.3 Pseudo Gapping as Pseudo-VP Ellipses in Urdu Axioms through Hybrid Type Logical Categorical Grammar

Through Hybrid Type-Logical Categorical Grammar, the occurrence of Pseudo gapping in Urdu verb phrase is found. It poses some challenging problems while implementing it on Urdu axioms as a lexical verb is deleted that is embedded under an auxiliary while leaving behind the complement of that lexical verb. As comparing to English embedded clauses behavior of verb constituents are seen in different way.

VP Ellipses Operators through Logical Categorical Grammar

$$\lambda \varphi. \varphi; \lambda \mathcal{F}. \mathcal{F} (P); VP \mid (VP/VP)$$

Where P stands for free variable. Its meaning can be generated through linguistic signs and operators in preceding discourse under category VP. An entry of derived auxiliary can be obtained in English axioms but the chain differs in Urdu axioms.

A list of logical operators has been provided below:

- φ stands for phonological form
- /, \ (directional slashes) or | are connectives in a prosodic effect to show syntactic type and directional type
- λ (lambda) abstraction for an elided constituent
- \wedge and, or
- \vdash proves
- \vee logical
- \forall for all
- \exists there exists
- \nexists doesn't exist
- \nmid does not yield

10. a. Fatima can sing but Farina can't \emptyset .

b. فاطمہ گاسکتی ہے لیکن فارینہ \emptyset نہیں۔

4.3.1 Anaphoric Mechanism to Retrieve the Missing Meaning

From VP Ellipses, there will be an extension to analyze Pseudogapping. The alternative sign which are used for auxiliary verb license VP ellipses and it retrieves the meaning of VP anaphorically in the preceding discourse. To saturate the VP argument, lexical signs of auxiliaries are applied in the form of operators. (10) a and b are analyzed as under for anaphoric mechanism to retrieve the meaning logically through Hybrid Type-logical Grammar to find either Pseudo-VP ellipses is remains logical and applicable for Urdu compound sentences or not.

4.3.2 Anaphoric Mechanism for English Axiom with Elided Constituent:

(11) a. Fatima can sing but Farina can't Ø.

| | | | |
|--|---|---|--|
| Can; | Sing; | e; | Can't; |
| $\lambda P \lambda x. \diamond P(x)$; | Sing; | $\lambda \mathcal{F}. \mathcal{F}(\text{sing})$; | $\lambda P \lambda x. \neg \diamond P(x)$; |
| <u>VP/VP</u> | VP | VP/(VP\VP) | VP/VP |
| <hr/> | | <hr/> | |
| Fatima; | Can \circ sing; | Farina; | Can't; |
| F; NP | $\lambda x. \diamond \text{sing}(x)$; VP | Fa; NP | $\lambda x. \neg \diamond \text{sing}(x)$; VP |
| <hr/> | | <hr/> | |
| Fatima \circ can \circ sing; | | Farina \circ can't; | |
| $\diamond \text{sing}(F)$; S | | $\neg \diamond \text{sing}(fa)$; S | |

$$\text{Sem}(S \mid (S/NP)) = (\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t} \text{ where Pros}(S \mid (S/NP)) = \mathbf{st} \rightarrow \mathbf{st}$$

The function gets complete with Sem and Pros after mapping syntactic type to semantic and prosodic type.

Three alternatives are generated to this approach for an English axiom:

- i. a hypothetical VP has a bound to its antecedent existing in main clause.
- ii. An empty VP with strong abstract logic exists there in connection with remnant in elided clause.
- iii. An empty operator syntactically gets identity as an output in the form of entry as alternative auxiliary.

4.3.3 Anaphoric Mechanism for Urdu Axiom with Elided Constituent:

(11) a. Fatima can sing but Farina can't Ø.

b. فاطمہ گاسکتی ہے لیکن فارینہ نہیں Ø۔

| | | | |
|--|---|---|--|
| Can; | Sing; | e; | not; |
| $\lambda P \lambda x. \diamond P(x)$; | Sing; | $\lambda \mathcal{F}. \mathcal{F}(\text{sing})$; | $\lambda P \lambda x. \neg \diamond P(x)$; |
| <u>VP/VP</u> | VP | VP/(VP\VP) | <u>VP/VP</u> |
| <hr/> | | <hr/> | |
| Fatima; | Can ◦ sing; | Farina; | not; |
| F; NP | $\lambda x. \diamond \text{sing}(x)$; VP | Fa; NP | $\lambda x. \neg \diamond \text{sing}(x)$; VP |
| <hr/> | | <hr/> | |
| سکتی ہے ◦ گ ◦ فاطمہ; | | نہیں ◦ فارینہ; | |
| $\diamond \text{sing}(F)$; S | | $\neg \diamond \text{sing}(fa)$; S | |
| <hr/> | | | |

Fails

$\text{Sem}(S \mid (S \setminus NP)) = (e \rightarrow t) \mid t$ where $\text{Pros}(S \mid (S \setminus NP)) = st \mid st$

$\lambda \phi. \phi; \lambda \mathcal{F}. \mathcal{F}(P); VP \mid (VP \setminus VP)$

The above derivation generates a discontinue string and brings a discontinuous constituency with a deep effect of prosodic λ -binding. Connectives with a backward slash \ used in prosodic type of Urdu string to derive the category $NP \setminus S$ gets fail to prove that where the variable ϕ occurs inside a whole term. The connectives have an empirical

significance in generating a meaningful vacuous string. Syntactically, it is logical but at semantic level it loses its logic.

Following alternatives are generated to this approach for an Urdu axiom:

- i. A hypothetical reasoning made for VP does not make any sense according to Hybrid Type Categorical Grammar and becomes unable to make any bound to its antecedent existing in main clause.
- ii. An empty VP with weak abstract logic exists there in connection with remnant in elided clause.
- iii. An empty operator syntactically gets no identity as an output in the form of entry being alternative auxiliary because a negative phrase alone in elided clauses owns sense.
- iv. Pseudo gapping tends to delete everything inside a verb phrase except the direct object but omitting the verb alone in Urdu axioms and leaving the direct object association to abstraction level does not meet the level of Pseudo gapping. Logically it becomes ungrammatical.
- v. A controversy arises in context of ellipses, the particular kind of deletion of material that does not form a single constituent. Being not one constituent is a barrier that is found in Urdu Axioms as there is a strict identity between the two phrases because obviously the second clause entails remnant that is left after deletions that material that does not line up between the two clauses.
- vi. Pseudo-VP gapping is found weak in Urdu compound Axioms as compare to English compound axioms. To a great extent, alone auxiliaries are found as remnant in English while VP in Urdu gets elided and alone Neg P (Negative Phrase) functions as remnant that is not be considered Hypothetical in perspective of Categorical Grammar because λ at its abstraction level can either elide whole VP along with Negative Phrase or it may leave a negative stranded verb as a remnant but in Urdu, abstraction level does not generate according to this synthetic structure.

4.4 Sluicing as Ellipses Phenomenon in Urdu Axioms

To diagnose either any sentential part of constituent question in Urdu compound or complex axioms go elided or not, Sluicing Ellipses as variant of gapping has been applied. In English compound and complex sentences this variant of gapping applies truly by leaving a wh-phrase as remnant but in Urdu, syntactic analysis along with hybrid type logical grammar is required to apply in following way to verify either the remnant in Urdu remains as meaningful as of English:

11.

a. Fareed bought something but I don't know what.

b. فرید نے کچھ خریدا لیکن مجھے پتہ نہیں کہ کیا۔

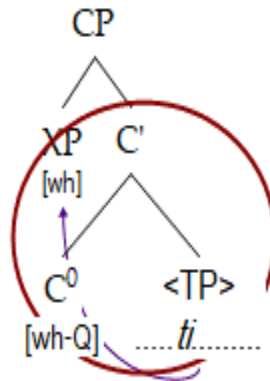
Now Sluices must be compared with their non-elliptical counterparts for which they are considered to be synonymous.

12.

a. Fareed bought something but I don't know what he bought.

b. فرید نے کچھ خریدا لیکن مجھے پتہ نہیں کہ اس نے کیا خریدا۔

Schematized Derivation 13:



[CP [XP [wh]] [C' [C0 [wh-Q]] [<TP>]]]

[CP what i C⁰ < [TP اس نے خریدا۔ ti] >

The above-mentioned schematized derivation of Urdu compound axiom analyses that there is occurrence of Sluicing as there is involvement of wh-phrase movement. There is c-commandment between node CP and the elided TP. Through Government Binding, a primary support can be observed as there is connectivity effect in derivation. Wh-Phrase moves out of specific sentential constituent (TP) and that node gets deleted as material that is unpronounced. Wh-phrase < TP اس نے خریدا۔ ti > in Urdu just like English, behaves similarly as “remnant” in Sluicing with almost symmetrical grammatical dependencies either in full sentential and non-elliptical forms. Binding phenomenon in above-mentioned schematized derivation shows a strong connectivity effect and generates parallelism for stranded prepositions. Moreover, the sluiced wh-phrase exhibits the same case that the compeer in a non-elided form exhibit. The sluiced wh-phrase in Urdu stands equally as meaningful in remnant form as before ellipses. Additionally, binding of elements as remnant for wh-phrase is equally logical in Urdu axioms.

4.4.1 Sluicing as wh-in-situ in Urdu

Wh-in-situ is another case of sluicing which needs to be analyzed to diagnose either wh-Phrase in Urdu move or not. This phenomenon for wh- phrases set in the position where it is normally associated with non-wh elements so for example back down in the object position or in the subject position. It is a phenomenon known as wh-in-situ. In-situ means in place. English does have wh-in-situ, it shows up in special context and the special intonation. The question word does not appear at the beginning of the specifier the CP. In fact, it appears to show up in exactly the same position that a normally non-wh element would appear in. this phenomenon converts into echo question that are not really requests for information so wh- questions are requests for information. It is worth noticing that echo questions don't in fact require a wh-phrase in them, instead they are marked by a special intonation and stress. It is possible that what's going into its structure that echo questions have a special null complementizer head that triggers this unique stress and intonation

patterns. This is one kind of wh-in-situ that is found in English but in Urdu language wh-in-situ can be used precisely in the same environment to check wh-movement through following analysis:

13.

اس نے یہاں کسی کو دیکھا۔

اس نے SG-ERG یہاں کسی کو OBL-ACC دیکھا PFV.M.SG۔

پر اسے نہیں پتا، کس کو۔

پر اس کو 1SG.DAT نہیں پتا کس کو OBL=ACC۔

‘He saw someone there but he does not know who.’

14. She saw someone there but she does not know...

a. ~~kis ko~~ mai-ne yahaa kis-ko dekha. Regular Verb

b.Kis-ko ~~main ne~~ yahaa ~~kis ko~~ dekha.

..... who.OBL-ACC 1SG-ERG here who.OBL-ACC see-PFV.M.SG

‘..... who (I saw there)’. Sluice

Significant evidences are found through properties of sluicing that Urdu must be marked through morpho-syntactic structure to assign in-situ to Urdu axioms. Apparently, a full case connectivity can be observed in examples 14,15,16(a,b) and 17(a,b) where there is a dire need for wh-remnant to be marked with the same in-situ case it exhibits in non-elided structure.

15.

ردا نے کس کو سوچا کہ فرید نے دیکھا۔

ردا F-ERG کس کو OBL-ACC سوچا PFV.M.SG۔

کہ فرید Fareed.M-ERG دیکھا PFV.M.SG۔

“Who did Rida think that Fareed saw?”

16.

تم کس کو سوچتے ہو کہ آئے گا۔

2SG کس کو ERG-سوچتے HAB-ہو PRS.2SG کہائے گاFUT.M.3SG
‘Who do you think will come?’

17.

میں نے یہاں کسی کو دیکھا، پر مجھے نہیں پتہ کس کو۔

میں نے SG-ERG یہاں کسی کو OBL-ACC دیکھاPFV.M.SG
مجھے SG.DAT نہیں پتہHAB.M.SG
کس کوOBL-ACC

‘I saw someone there but I don’t know who?’

18.

کسی نے فاطمہ کو دیکھا لیکن مجھے نہیں پتہ کس نے۔

کسی نے OBL-ERG فاطمہ کو F-ACC دیکھاPFV.M.SG
لیکن مجھے SG.DAT نہیں پتہHAB.M.SG
کس کوOBL-ERG

Urdu requires that post positions are pied-piped in sluiced structure. Consider followings examples:

19.

فاطمہ کھانا پکا رہی ہے پر فراز کو نہیں پتا کہ کس کے لیے۔

فاطمہ کھانا M.SG-پکا رہی ہےcaus PROG-F.SG PRS.3SG
لیکن فراز M-DAT نہیں NEG جانتاHAB.M.SG
کس کے لئے GEN.OBL for/who.OBL/who.NOM

20.

فرید کوئی کتاب خریدنا چاہتا ہے، ہمیں نہیں پتا کونسی فرید خریدنا چاہتا ہے۔

4.4.1.1 Generalizations on the Basis of Sluiced Urdu Axioms Exp.14-21

Analysed data in Examples 14-21 elaborates that:

1. Sluicing is not just a case of elision any constituent that is smaller than a TP. Urdu considers clause-sized phenomenon or TP. Sluicing in Urdu tends to elide a larger constituent.
2. Sluicing in Urdu can elide a VP projection which means it favors a sized TP elision. A tense auxiliary unlike stripping tends to be having apparent sluicing.
3. Sluicing is observed much applicable at Urdu axioms as it is very similar to VP Ellipsis. Instead of just deleting a verb phrase in Sluicing, it exactly favors to delete an entire Tense Phrase. It happens in wh constructions as in Urdu a great tendency is found to omit TP after a question word.
4. It appears, the word has moved from inside VP to the specifier of CP and then the TP is deleted that follows it.

4.5 Stripping as Elliptical Operation on Urdu Compound Axioms

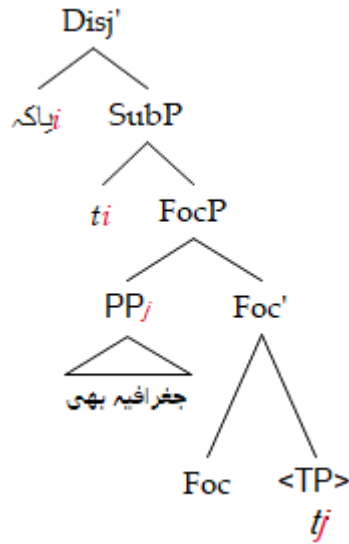
To diagnose Stripping as another variant of gapping, the structural condition of embedded environment of Urdu axioms are required to be analyzed keeping in view that stripping is only applicable in conjoined structures. According to rules in stripping only one constituent in Urdu compound axiom must left behind as remanent. Some examples from Urdu colloquial conversation is required to be analyzed to find occurrences of Stripping in Urdu.

21.

- a. Does Salman love to study history or geography ~~he likes to study~~ too?

b. کیا سلمان کو تاریخ پڑھنا پسند ہے یا کہ جغرافیہ بھی اسکو پڑھنا پسند ہے؟

Schematized Derivation 22b.



[Disj' [یا کہ] [SubP [ti] [FocP [PPj جغرافیہ بھی] [Foc' [Foc] [<TP> tj]]]]]

[Disj' [یا کہ] [SubP [ti] [FocP [PPj جغرافیہ بھی] [Foc' [Foc] [<TP> tj]]]]]

This Urdu embedded axiom allows stripping coordinating with “or” differently. Clause size matters here as case connectivity and follows clausal ellipses. Urdu stripping complies with generalization of P-stranding. With little modification in structure Urdu postpositions strand under movement and essentially, they appear just like Urdu Sluicing construction. Urdu postposition is clear and appears to be logical through syntactic analysis of gapped Urdu axiom. An embedded stripping comes possible with specific complementizer which binds itself with elided constituent at abstract level in logical way. Stripping here correlates as subspecies of gapping with little modifications and leaving only single remnant. Urdu in stripping is found to be involved in focus driven movement. The schematized derivation for the disjunct has been analyzed that appears as alternative question. "یا کہ" acts as a subordinating marker. Movement of remnant is very clear towards a focus projection. This focus projection follows clausal Ellipses and confirms stripping to be occurred. The analysis permits one to keep aligned and same syntax for "یا کہ" which is

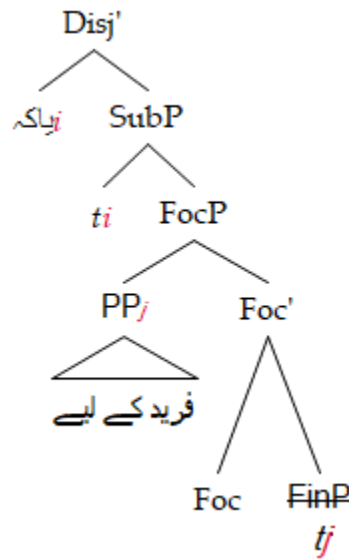
observed to take a clause complement. It becomes obvious that clause size matters for occurrence of stripping in Urdu embedded axioms.

22.

a. Did you make cookies for Fraz or Sultan?

b. کیا تم نے فراز کے لیے کھانا بنایا یا کہ فرید کے لیے؟

Schematized Derivation 15:



[Disj' [یا کہ] [SubP [ti] [FocP [PPj فراز کے لیے] [Foc' [Foc] [FinP tj]]]]]

This above-mentioned derivation assumes second disjunct in an alternative question. Again "کہ" is a subordinate marker and exhibits a movement of a remnant which follows a clausal ellipsis under focus projection. "کہ" is a subordinator which has potential for being disjunct as well. To a great extent, it is observed that "یا کہ" co-occur frequently in Urdu embedded clauses/sentences as morphological complexity. "یا کہ" projects under PP as a complement and doesn't generate a clause level projection. So, it can be one reason that this example involves a clausal complement with another operation for ellipses. Such types of questions in Urdu will not go for polar reading Yes/No answers but they will answer as

alternate reading i.e For Fraz/For Fareed. Alternate reading invites clausal Ellipses here in the above-mentioned example. For a P-Stranding generalization, the second conjunct must omit a preposition only if that preposition can be stranded under some movement. In English this generalization of stranded movement of preposition is possible by omitting preposition in second conjunct but it is not possible in Urdu as it leads to ungrammaticality by removing preposition from second disjunct. Exclusion of the postposition in second disjunct bring inaccuracy in grammar of the sentence. In Urdu a P-omission or postposition stranding under-movement is not accepted. Moreover, this example of elided Urdu axiom accounts that there is a lack of P-omission in Urdu. Height in a clause is of great significance because it guarantees the availability of a specific complementizer-type heads to save ellipses.

4.6 Findings

After analyzing the data, the following findings have been gleaned:

1. The researcher finds that dealing with application of variants of gapping through hybrid type logical grammar, morphological patterns of Urdu axioms bring a distinctive process of construction of main verbs in Urdu gapped clauses. A transformation of one form results in the appearance of another. In Urdu, a complex predicate would often consist of a number of different verbs combined. These intricate predicates are influenced in a variety of unique ways, depending on the tenor and aspect of the verb. Urdu gapped sentences have a morphology that is somewhat complicated, and it is found in association with certain auxiliaries and aspectual verbs. Tense aspect system in Urdu is somewhat complex. Tense(time) in Urdu describes a temporal relation where a speaker finds himself, while Aspect (point of view or perspective) is understood through the way in which something is said. So, variants of gapping are not found functioning or occurring in Urdu embedded clauses/sentences same as English.

2. It is observed that Urdu features verb-stranding ellipses along with subject pronominal drop which means that whole clause of the responder is reduced to the verb alone. Verb in verb-stranding VPE moves out of a verb phrase at a higher head which causes an ellipsis of verb phrase while vP internal substances or constituents remain same and verb strands itself.
3. Urdu allows null pronominals for various objects. So, by eliding separate arguments of the verb, it features Argument Ellipsis by generating verb-stranding string and allows DP argument go missing.
4. An elided argument is also revealed in verb phrase ellipses of a clause-sized constituent where verb has moved out of it. Tense Phrases of Urdu axiom and their tree diagrams having ellipses, authenticate that there is a battery of syntactic diagnostics to identify creation of verb-stranding VPE/TPE.
5. In Urdu axioms negative phrase does not project under Auxiliary Phrase or Tense Phrase instead it becomes daughter to TP and sister to Auxiliary Phrase. Contrary to Urdu, English Negative Phrase must be governed by Tense Node and must be in daughter relation with it. While Residuation law in logical calculus way allows Negative Phrase in Urdu axiom to be separated and exist alone as remnant and generates a gapped clause containing Ellipses.
6. Urdu does not have a comparable to the English construction known as the classic VPE. In this construction, the primary verb and any accompanying internal arguments are removed, retaining only the auxiliary verb. To bring the remnant under Binding Domain, both clauses must project from single CP through logical C-Command. In Urdu, the main verb is found outside of the verbal layer at the time of ellipsis, and therefore cannot be elided under VPE. As we might then expect, Urdu does appear to exhibit a particular kind of verb-phrase ellipsis often termed verb-stranding verb-phrase ellipsis or VVPE. In this particular variety, the main verb is perceived to move outside of the vP, and as a result, the vP as a whole is omitted.
7. In Urdu embedded gapped clauses, any verb movement out of the vP is string-vacuous, as all the heads of the verbal complex appear on the right. A familiar

fact concerning the verbal complex in Urdu is that the inflected verb, aspectual affixes/auxiliaries, and tense auxiliaries cannot typically be separated by any kind of displacement, though they can be displaced as a unit.

8. The occurrence of Pseudogapping in Urdu verb phrase is found through Hybrid Type-Logical Categorical Grammar and application of logical operators. It poses some challenging problems while implementing it on Urdu axioms as a lexical verb is deleted that is embedded under an auxiliary while leaving behind the complement of that lexical verb. As comparing to English embedded clauses behavior of verb constituents are seen in different way. An extension is there from VP Ellipses to analyze extent of occurrences of Pseudogapping. The alternative signs which are used for auxiliary verb license VP ellipses and it retrieves the meaning of VP anaphorically in the preceding discourse. To saturate the VP argument, lexical signs of auxiliaries are applied in the form of operators. An anaphoric mechanism that how to retrieve the meaning logically through Hybrid Type-logical Grammar to find either Pseudo-VP ellipses remains logical and applicable for Urdu compound sentences or not. As compare to Urdu three alternatives are generated through Pseudogapping approach for an English axiom:
 - a. A hypothetical VP has a bond to its antecedent existing in main clause.
 - b. An empty VP with strong abstract logic exists there in connection with remnant in elided clause.
 - c. An empty operator syntactically gets identity as an output in the form of Enty as alternative auxiliary.
9. A discontinued string is observed in Urdu compound sentences consisting gapped clauses which brings a discontinuous constituency with a deep effect of prosodic λ -binding. Connectives with a backward slash schedule some time for us to connect. Prosodic type of Urdu string derives the category $NP \setminus S$ which gets fail to prove that where the variable ϕ occurs inside a whole term. The

connectives have an empirical significance in generating a meaningful vacuous string. Syntactically it is logical but at semantics level it loses its logic.

The following alternatives are generated to this approach for an Urdu axiom:

- i. A hypothetical reasoning made for VP does not make any sense according to Hybrid Type Categorical Grammar and becomes unable to make any bound to its antecedent existing in main clause.
- ii. An empty VP with weak abstract logic exists there in connection with remnant in elided clause.
- iii. An empty operator syntactically gets no identity as an output in the form of entry being alternative auxiliary because a negative phrase alone in elided clauses owns sense.
- iv. A controversy arises in context of ellipses, the particular kind of deletion of material that does not form a single constituent. Being not one constituent is a barrier that is found in Urdu Axioms as there is a strict identity between the two phrases because obviously the second clause entails remnant that is left after deletions that material that does not line up between the two clauses.
- v. Pseudo-VP gapping is found weak in Urdu compound Axioms as compare to English compound axioms. To a great extent, alone auxiliaries are found as remnant in English while VP in Urdu gets elided and alone Neg P (Negative Phrase) functions as remnant that is not be considered Hypothetical in perspective of Categorical Grammar because λ at its abstraction level can either elide whole VP along with Negative Phrase or it may leave a negative stranded verb as a remnant but in Urdu, abstraction level does not generate according to this synthetic structure.
- vi. There is a discontinuity in Pseudo-VP Gapping in Urdu Axioms. Pseudo-VP gapping is found weak in Urdu compound Axioms as compare to English compound axioms. To a great extent, alone auxiliaries are found as remnant in English while VP in Urdu gets elided and alone Neg P (Negative Phrase) functions as remnant that is not considered Hypothetical in perspective of

Categorial Grammar because λ at its abstraction level can either elide whole VP along with Negative Phrase or it may leave a negative stranded verb as a remnant.

- vii. Pseudogapping type of construction often shows up in a comparative environment where one thing is compared with to another after leaving off all the material that is not contrasted so in first clause and in second clause there must be a contrast but that contrast lacks in Urdu embedded axioms as alone direct object can't make sense with a whole TP in first clause. If contrasted material is unable to convey exact or whole meaning that gapped clause becomes fail to interpret grammatically. There must be a logical contrast among the comparative material. The elided or lifted material must make a constituent according to rules of configuration of Pseudogapping. It seems to be the case then that this is some kind of non-constituent ellipses. Regularly speaking in most Pseudogapping, the thing that survives the deletion operation is the direct object. There are two hypotheses about this particular structure: one comes from the linguist Howard Lasnik and he suggests that working with second clause, the direct object needs to be moved out of verb phrase and into the specifier of Agreement Object Phrase which has not been yet identified in Urdu as syntactically accepted independent phrase that can be elided to give logical reasoning. Accusative case ion DPs need to have this operation for object shift along with subject and object raising. The hypotheses in meaning making process at Urdu gapped clauses requires antecedent that contains deletion. By moving DP out of the structure, the elided or ellipted verb phrase does not survive. Everything else that in inside the verb phrase has a strong bond that after deletion loses grammaticality. In Pseudogapping there is deletion of not just VP but deletion of auxiliary that is higher in agreement object phrase so a escape hatch by moving the direct object into this position is undermined by the fact that the material is deleted that is higher in tree.
10. ATB is very close to Pseudogapping but works little for Urdu embedded axioms to move question word to abstraction level after becoming remnant.

Question word in this configuration find two traces so it has two origin points. Single moved element seems to have two traces under coordination. In English verbs moves into their voice heads that is short verb movement to explain the word order and ditransitive construction. Same case has been observed that verb in Urdu as well moves into voice. So, through voice raising Across the Board movement is found to be applicable in Urdu and let the long constituent or phrases elide. In Urdu under a single voice a complex verb phrase can be commonly found. An active voice introduces compliment where a compliment is taken complex DP and a comparative CP. A CP that is compared against the properties of this DP. A trace between the verb along with main object more squid. A secondary trace appears at the verb of comparative clause. From two different positions the verbs raise into the single voice head. So, it gives the effect on element where the object is left behind by getting rid of the verb, the verb is raised up higher in the tree. A complete reliance on ATB generated a problematic hypothesis as ATB relies upon ATB of verb heads into voice heads two verbs are moved at once to voice heads but sometimes things are not voice heads that get elided in the second clause. The absence of main verb in Pseudogapping under the ATB hypothesis because of head movement but deleting things other than heads then that hypothesis can't work.

11. There is an occurrence of Sluicing in Urdu elided axioms as there is involvement of wh-phrase movement. There is c-commandment between node CP and the elided TP. Through Government Binding, a primary support can be observed as there is connectivity effect in derivation. Wh-Phrase moves out of specific sentential constituent (TP) and that node gets deleted as material that is unpronounced. An elided Wh-phrase in Urdu just like English, behaves similarly as “remnant” in Sluicing with almost symmetrical grammatical dependencies either in full sentential and non-elliptical forms. Binding phenomenon through schematized derivation shows a strong connectivity effect and generates parallelism for stranded prepositions. Moreover, the sluiced wh-

phrase exhibits the same case that the compeer in a non-elided form exhibit. The sluiced wh-phrase in Urdu stands equally as meaningful in remnant form as before ellipses. Additionally, binding of elements as remnant for wh-phrase is equally logical in Urdu axioms.

12. Clause size matters in Urdu embedded axiom in identifying occurrence of stripping which is another variant of gapping. Conjunctions and disjunctions in Urdu axioms and compound sentences act differently as case connectivity. Stripping follows clausal ellipses. Urdu stripping complies with generalization of P-stranding. With little modification in structure Urdu postpositions strand under movement and essentially, they appear just like Urdu Sluicing construction. Urdu postposition is clear and appears to be logical through syntactic analysis of gapped Urdu axiom. An embedded stripping comes possible with specific complementizer which binds itself with elided constituent at abstract level in logical way. According to data analyses, Stripping correlates as subspecies of gapping with little modifications and leaving only single remnant. Urdu in stripping is found to be involved in focus driven movement. The schematized derivation for the disjunct has been analyzed that appears as alternative question. "ك" acts as a subordinating marker. Movement of remnant is very clear towards a focus projection. This focus projection follows clausal Ellipses and confirms stripping to be occurred. The analysis permits one to keep aligned and same syntax for "ك" which is observed to take a clause compliment. It becomes obvious that clause size matters for occurrence of stripping in Urdu embedded axioms.
13. For a P-Stranding generalization, the second conjunct must omit a preposition only if that preposition can be stranded under some movement. In English this generalization of stranded movement of preposition is possible by omitting preposition in second conjunct but it is not possible in Urdu as it leads to ungrammaticality by removing preposition from second disjunct. Exclusion of the postposition in second disjunct bring inaccuracy in grammar of the sentence. In Urdu a P-omission or postposition stranding under-movement is not

accepted. Moreover, this example of elided Urdu axiom accounts that there is a lack of P-omission in Urdu. Height in a clause is of great significance because it guarantees the availability of a specific complementizer-type heads to save ellipses.

14. Sluicing is observed much applicable at Urdu axioms as it is very similar to VP Ellipsis. Instead of just deleting a verb phrase in Sluicing, it exactly favors to delete an entire Tense Phrase. It happens in wh constructions as in Urdu a great tendency is found to omit TP after a question word. It appears, the word has moved from inside VP to the specifier of CP and then the TP is deleted that follows it.

4.7 Discussion

The findings of this study suggest that some of the variants of gapping make occurrences of gapping and ellipses with logical reasoning in Urdu. The researcher concluded that, when dealing with the application of variants of gapping through hybrid logical grammar, the morphological patterns of Urdu axioms bring a distinct process of construction of main verbs in Urdu gapped clauses. A transformation of one form results in the appearance of another. A complex predicate in Urdu is often made up of several different verbs combined. These intricate predicates are influenced in a variety of unique ways, depending on the tenor and aspect of the verb. Urdu gapped sentences have a morphology that is somewhat complicated, and it is found in association with certain auxiliaries and aspectual verbs. As a result, unlike in English, variants of gapping are not found functioning or occurring in Urdu embedded clauses or sentences. Urdu allows null pronominals for various objects. So, by eliding separate arguments of the verb, it features Argument Ellipsis. While treating Urdu axioms with the second variant of gapping, the researcher finds a discontinuity in Pseudo-VP Gapping. Pseudo-VP gapping is found weak in Urdu compound Axioms as compare to English compound axioms. To a large extent, alone auxiliaries are found as remnants in English, whereas VP in Urdu is elided, and alone

Neg P (negative phrase) functions as a remnant that is not considered hypothetical from the standpoint of categorial grammar because at its abstraction level, it can either elide the entire VP along with the negative phrase or it can leave a negative stranded verb as a remnant. When the third variant is operationalized, it is discovered that there is a greater tendency for sluicing to occur in Urdu elided axioms as there is involvement of wh-movement. Moreover, an elided Wh-phrase in Urdu just like English, behaves similarly as "remnant" in Sluicing with almost symmetrical grammatical dependencies either in full sentential and non-elliptical forms. The fourth gapping variant applied to Urdu gapped clauses is stripping, which reveals that Urdu for this variant is involved in focus-driven movement. Clause size matters for the occurrence of stripping in Urdu embedded axioms, Clause size is actually the reason for variation in schematized derivation of Urdu gapped clauses syntactically and semantically.

Kubota and Levine (2016) revealed that the low VP coordination analysis of Gapping is refuted by certain fresh empirical arguments. The present study finds similarity with the research of Kubota and Levine (2016), as both studies follow the same framework of Johnson (2009) to analyze the data. The suggested analysis of Kubota and Levine's (2016) work is couched in a version of categorial grammar (CG) termed Hybrid Type-Logical Categorial Grammar. This variant of CG builds on both the Lambek-inspired forms of CG. In addition, there is a newer branch of research that models prosodic components using a lambda calculus and models word order. According to Kubota and Levine (2016), the low VP coordination analysis postulates that there is an undesirable structural asymmetry between the two conjuncts; this asymmetry is essentially the source of the analysis's failure to accurately predict outcomes. This method, on the other hand, eliminates the need to postulate such an asymmetry. They suggest that examination of Gapping interacts with separately motivated analyses of scopal operators to quickly provide the seemingly abnormal scopal features in Gapping, and they show that this interaction occurs in Gapping. Their research is limited to English gapped clauses. So, gapping, along with its variant ATB (Across the Board Movement), has been analyzed for elided constituents in English embedded sentences, suggesting that in the "logic" of natural

language syntax, both directional and non-directional inferences, as well as how they can work together in different ways, are very important. In fact, the Gapping construction is nearly a natural result of the way grammar is built: other types of noncanonical coordination show hypothetical reasoning with directional slashes, with the missing material either on the right (Right-Node Raising) or on the left (Argument Cluster Coordination); Gapping is just the other potential, where the omitted material is in the middle, but hypothetical reasoning is still shown with the directional slashes.

Kidwai (2018) applied Sluicing (one of the variants of Gapping) on Urdu gapped clauses. She has applied Abels' (2017) Fit condition in order to expose that the remnant must fit into the position of the correlate to make a well-formed structure, and the meaning of the antecedent and the sluice should be the same. Kidwai has suggested that applying the Abels' (2017) Fit condition at the level of the deep structure results in an incorrect prediction of extensive Case-mismatching and that, as a result, it should be implemented at the surface level with form-by-form matching instead. In contrast Kidwai's (2018) findings, the present study finds uses Hypothetical reasoning to support occurrences of Sluicing in Urdu compound and complex gapped clauses/axioms. Findings of the present study has shown that Sluicing is much applicable at Urdu axioms as it is very similar to VP Ellipsis. Instead of just deleting a verb phrase in Sluicing, it exactly favors to delete an entire Tense Phrase. It happens in wh constructions as in Urdu a great tendency is found to omit TP after a question word. It appears, the word has moved from inside VP to the specifier of CP and then the TP is deleted that follows it.

The researcher discovered a comparison of her study in Wonsuk's (2022) study. The difference is that Wonsuk (2022) has applied gapping with only one other variant on Spanish embedded sentences, while the present study finds the impact of all major variants and subvariants of gapping on Urdu gapped clauses. Wonsuk (2022) argues that the distinction between English and Spanish can be explained by considering the Phasehood of the embedded CP, which is used to evaluate whether or not embedded gapping is possible. It has been theorized that the phasal state of embedded CP is linked to the likelihood of embedded stripping, in conjunction with phasehood inheritance in these

settings (Citko 2020). Wonsuk (2022) suggests If the structural constraint for embedded stripping also applies to embedded gapping, then the same empirical implications would be expected for both processes. The only difference between the two is the quantity of remnants left behind after the stripping operation.

Although there has been extensive study of ellipses and other forms of gapping in verb phrases in a number of languages, the extent to which this phenomenon is possible in Urdu remains the least considered. This study reveals that Urdu axiom indeed exhibits VPE. In head final language, there is a strong empirical tendency for obligatory V-to-Asp0. This study engages with VPE in Urdu axioms with complex predicate structure. A unique logical hybrid type of grammar has been applied to extract a logical meaning by analyzing remnants. To my knowledge, this hybrid type of syntactic analysis of Urdu gapped clauses with the application of X' theory has not been done before. It's quite a supportive amalgamation. This study has discovered that V-V complex predicates actually do not allow verb phrase ellipses pattern where light verbs could stand alone. This research suggests that there are multiple classes of Noun-Verb Phrase complex predicates in Urdu. Several N-V complex predicates in Urdu tend to pair with V-V complex predicates, which don't allow a light verb to be stranded alone. This research has considerable and desired consequences for a better understanding of the syntax and semantics of gapped clauses of Urdu axioms, along with logical proofs. It also gives a deep understanding of the abstraction level of elided constituents in the context of a cross-linguistic approach. Further, it is suggested that some of our hypotheses related to Urdu English parallelism are only partially correct, so the proposed generalizations for Pseudogapping and Across the Board Movement need to be focused more to specify the flexibility of movement of verbs outside gapped clauses and construct a logical meaning. Moreover, the binding relationship among phrase entities has not been worked out for Urdu and becomes a barrier to finding occurrences of gapping with all its variants in the context of Categorical Grammar. The area of dominance, precedence, c-command, and government binding requires attention while doing synthetic analysis of Urdu gapped clauses to generate logical reasoning and eliminate ambiguous sentences used in routine. Ambiguous sentences in Urdu with reference to

ellipses and gapping are required to be considered in order to show how these two syntactic phenomena (and their variants) lead to ambiguity. Future researchers can also work on the use of conjunctions and disjunctions in Urdu, which create a puzzled configuration for a TP or Finite Phrase to be elided.

CHAPTER 5

CONCLUSION

Gapping is a form of language-specific ellipsis. It allows maximum deletion of strings of words, verb phrases, or noun phrases from a sentence, statement, proposition, or axiom while preserving the precise, complete, and sensible meaning of compound and complicated predicates. Contraction is utilized by language users to communicate in a short period of time due to its critical demand in any language. The study used the framework of Lambek-inspired forms of CG in the context of hybrid type-logical categorical grammar to find the maximum possible presence of functionality of variants of gapping and find restrictions levels in order to enhance the maximum level of the meaning-making process in order to find the best gapping structure for Urdu complicated embedded clauses and maximal subtype occurrence. Data has been analyzed with proposed methodologies formulated through the frameworks of Johnson (1996, 2009) and Lambek (1958). Categorical Grammar is taken as an independent variable while Gapping and Ellipsis are taken as dependent variables. The study helps Urdu teachers, users, and students comprehend and employ contraction in compound and difficult phrases. Understanding Urdu compound and complicated phrases with ellipses reduces ambiguity.

The study sought answers to the following research questions:

1. To what extent do Urdu complex predicates resist the VPE (Verb Phrase Ellipsis) of the light and main verbs in their syntactic structure?
2. How does verb movement affect the VP layer in Urdu axioms with complex predicates?
3. How does gapping affect the meaning-making potential of Urdu axioms?

After the operationalization of the study, the following answers to the research questions have been obtained:

The first research question required determining the extent of resistance of Urdu complex predicates in syntactic structure to verb phrase ellipsis in light and main verb. The main verb structure of the Urdu gapped clause is unique due to morphological patterns of axioms. Urdu's complex predicates have numerous verbs. Tense and aspect influence complicated predicates differently. Urdu gapped sentences include complicated morphology with auxiliaries and aspectual verbs. Urdu tenses are complicated. In Urdu, tense (time) refers to a speaker's temporal position, whereas aspect (perspective) is expressed through speech. Thus, while Urdu embedded clauses and sentences do not favour VPE versions equally as much as English, there is a striking resemblance.

It is observed that Urdu features verb-stranding ellipses along with subject pronominal drop, which means that the whole clause of the responder is reduced to the verb alone. verb in "verb-stranding" VPE moves out of a verb phrase at a higher head, which causes an ellipsis of the verb phrase while vP internal substances or constituents remain the same and the verb strands itself.

Urdu allows null pronominals for various objects. By removing the verb's separate alone arguments, it achieves Argument Ellipsis by generating a verb-stranding string and allowing the DP argument to go missing.

The second question tries to find restrictions for Verb movement outside the VP layer. An elided argument is also revealed in the verb phrase ellipses of a clause-sized constituent where the verb has moved out of it. The Urdu axiom tense phrases and their tree diagrams with ellipses demonstrate that there is a battery of syntactic diagnostics to identify the creation of verb-stranding VPE or TPE.

In Urdu axioms, the negative phrase does not project under the auxiliary phrase or the tense phrase; instead, it becomes the TP's daughter and the Auxiliary Phrase's sister. In contrast to Urdu, the English negative phrase must be governed by and in daughter

relationship with the tense node. While the residue law in logical calculus allows the negative phrase in the Urdu axiom to be separated and exist alone as a remnant, it also generates a gapped clause containing ellipses.

Urdu does not have an equivalent to the English construction known as the classic VPE. In this construction, the primary verb and any accompanying internal arguments are removed, retaining only the auxiliary verb. To bring the remnant under the binding domain, both clauses must project from a single CP through a logical C-command. When an ellipsis occurs in an Urdu sentence, the main verb can be located outside of the verbal layer, and because of this, it is not possible to gloss over it under VPE. Urdu appears to exhibit a special type of verb-phrase ellipsis that is frequently referred to as "verb-stranding verb-phrase ellipsis," or VVPE. This is something that we might anticipate it to accomplish. In this specific version, the main verb is perceived to move outside of the VP, and as a result, the VP as a whole is omitted.

In Urdu embedded gapped clauses, because all of the heads of the verbal complex are located on the right, any verb movement that occurs outside of the vP is string-vacuous. When it comes to the verbal complex in Urdu, it is well known that the inflected verb, aspectual affixes, and tense auxiliaries can be dislocated as a unit, but they can also be detached by any kind of displacement. However, this is not to say that they cannot be displaced.

The third research question entails determining the meaning-making capacity of gapping in Urdu embedded axioms. Three variants of gapping ATB, VPE, and sluicing favor maximum abstraction level for meaning making process via logical reasoning. Stripping and Pseudogapping limit the ability of Urdu embedded gapped axioms to generate reasoning, as morphological syntactic structure limits Urdu's ability to develop logic on a single direct object because light verbs cannot be separated from finite phrases or tenses. In Urdu gapped clauses, these specific variants of gapping generate discontinuity and grammatical discrepancies.

5.1 Significance of the Study

According to the findings of the research, there is a significant amount of English language impact on Urdu, and as a result, the language is increasingly losing its uniqueness in terms of structural dependencies and grammatical case connectivity. Urdu complex predicates are at risk of becoming ambiguous and ungrammatical, particularly in embedded and gapped contexts. If the distortion in the syntactic structure of Urdu is not taken seriously, it has been observed to have a propensity toward irreversible loss of the language's grammatical structure. As a result of the significant impact that the English language has had on Urdu, the grammatical structure of the language has frequently been distorted, yet this has been overlooked by its users. The impact of foreign languages on Urdu is having an effect on the meaning-making process of Urdu axioms in contexts when they are omitted. It is observed that the translation method has only been employed to translate English into Urdu so that people might learn English. Consequently, they have started acquiring grammatically incorrect components and phrases in their everyday speech. According to the findings of this study, the Urdu language cannot absorb all of the characteristics of the English language since it is not feasible to do so. It is not conceivable to translate one language into another using a one-to-one correspondence; instead, only the sense or meaning may be communicated. Each variant of gapping emphasizes the significance of its implication from a different angle:

The first variant of gapping is VVPE, which has been employed to verify its role in generating meaning. The use of VVPE has revealed that when using VPE through hybrid logical grammar, morphological patterns of Urdu axioms bring a distinct process of construction of main verbs in Urdu gapped clauses. The emergence of a different form might be caused by the transformation of an earlier form. When constructing a complicated predicate in Urdu, it is common practice to blend a number of distinct verbs together. The tenor and aspect of the verb exert a number of distinct influences on these complicated predicates, and those influences can take many different forms. Gapped sentences in Urdu have a morphology that is relatively difficult, and they are seen in connection with certain

auxiliaries and aspectual verbs. The combination of subject pronominal drop and verb-stranding ellipses in Urdu results in the whole response clause being condensed down to only the verb. In verb-stranding, the VPE leaves a verb phrase at a higher head, which results in an ellipsis of the verb phrase, but the vP's internal substances or components stay the same, and the verb strands itself. In Urdu, null pronominals can be used for a variety of different items. As a result of removing distinct alone arguments of the verb, it exhibits Argument Ellipsis by generating a verb-stranding string and allowing the DP argument to be omitted entirely.

The second variant that has been employed to measure the potential of gapping at Urdu axioms is Pseudo gapping. The utilization of logical operators and the Hybrid Type-Logical Categorical Grammar both contribute to the discovery of the presence of weak or strong occurrences of Pseudo gapping in Urdu verb phrases. In Urdu compound sentences composed of gapped clauses, a discontinuous string is observed, resulting in a discontinuous constituency with a strong effect of prosodic -binding. Connectives with a backward slash schedule some time for us to connect. The prosodic type of Urdu string derives the category NP\S which gets fail to prove that the variable ϕ occurs inside a whole term. The connectives play an empirical role in producing a meaningful vacuous string. Syntactically it is logical but at semantics level it loses its logic. When compared to English compound axioms, pseudo-VP gapping is observed to be less common in Urdu compound axioms. To a large extent, alone auxiliaries are found as remnant in English, whereas VP in Urdu is elided and alone Neg P (negative phrase) functions as remnant. This is not considered hypothetical from the standpoint of categorical grammar because at its abstraction level, it can either elide the entire VP along with the negative phrase or it can leave a negative stranded verb as a remnant.

The third variant is Sluicing which is discovered to be particularly applicable to Urdu axioms due to the fact that it is somewhat comparable to VP ellipsis. When you use Sluicing, it deletes a whole tense phrase rather than simply a single verb phrase as some other grammar operations does. It occurs in wh constructions because there is a strong tendency in Urdu to omit the TP after a question word. It would appear that the term has

been relocated from inside the VP to the specifier of the CP, and then the TP that follows it has been removed. In-Situ as a sluicing variant highlights elision in Urdu axioms significantly. In-situ forms echo questions. Echo questions have a special null complementizer head that trigger unique stress and intonation patterns. The question word does not appear at the beginning of the specifier, "CP." In fact, it appears to show up in exactly the same position that a normally non-wh element would appear in. This phenomenon converts into "echo questions" that are not really requests for information, so wh- questions are requests for information. It is worth noticing that echo questions don't in fact require a wh-phrase; instead, they are marked by a special intonation and stress. The process of sluicing does not just involve the elimination of any component that is smaller than a TP. In Urdu, we talk about TP, which stands for clause-sized phenomenon. In Urdu, the sluicing has the tendency to omit a larger part of a sluiced clause. It is possible for sluicing in Urdu to elide a VP projection, which indicates that it favors eliding a sized TP. A tense auxiliary, on the other hand, will typically exhibit sluicing, in contrast to stripping. Due to the fact that sluicing is extremely comparable to VP ellipsis, it is noticed to be very appropriate at Urdu axioms. When you use Sluicing, it deletes a whole tense phrase rather than simply a single verb phrase like some other grammar operations do. So, this way the meaning-making process is not distorted, and sluicing is found to be applicable and a significant variant that contains the maximum potential for ellipses in Urdu axioms.

The fourth variant (Stripping) of gapping is also found to be significant as it puts some restrictions on Urdu morpho-syntactic structure because a weak agreement has been observed between remnant and elided constituent. The "or" in stripping coordination can be handled in a variety of ways according to an embedded axiom in Urdu. The size of the clause is important in this context since case connectedness follows clausal ellipses. The Urdu stripping method conforms to the generalization of the P-stranding methodology. With very minor adjustments made to the structure Urdu postpositions strand under movement, and in essence, they seem exactly the same as Urdu Sluicing structure. A syntactic examination of the gapped Urdu axiom reveals that the postposition is understandable and seems to follow a logical progression. A special complementizer that

connects itself with an elided element at an abstract level in a logical order makes it possible to carry out embedded stripping. The term "stripping" refers to a subspecies of gapping that involves only minor changes and the retention of a single remnant. Urdu is found to be involved in focus-driven movement in stripping. The movement of the remnant can be made out in the direction of the focus projection. This focus projection uses clausal ellipses, which makes it possible for stripping to take place. Because of this analysis, it is possible to maintain the same syntax and alignment for the Urdu disjunct, which is known to accept a clause complement. Clausal ellipses are encouraged in alternate readings. The second conjunct of a P-stranding generalization must omit a preposition only if that preposition can be stranded under some movement. This generalization of stranded movement of preposition is possible in English by omitting the preposition in the second conjunct, but it is not possible in Urdu because removing the preposition from the second disjunct leads to ungrammaticality. The exclusion of the postposition in the second disjunct brings inaccuracy to the grammar of the sentence. In Urdu, a p-omission or postposition stranding while in motion is not acceptable. Moreover, all examples of elided Urdu axioms account for the lack of p-omission in Urdu. Height in a clause is of great significance because it guarantees the availability of a specific complementizer-type head to save ellipses.

All variants of gapping have been observed to be significant after they have been applied to Urdu gapped clauses to analyze their role in finding potential for gapping in the meaning-making process. Two variants of gapping, i.e., VVPE and Sluicing are observed to be applicable which bring no ungrammaticality to Urdu gapped clauses. On the other hand, the rest of the two variants, Pseudogapping and Stripping do not fully satisfy Urdu morpho-syntactic structure in the meaning-making process. These two variants are worth mentioning in verifying how ungrammaticality in Urdu gapped axioms can be highlighted through logical proofs. After detection of ungrammatical patterns in elided axioms in Urdu, further distortion is easy to control.

5.2 Limitations of the study

Maximum Urdu axioms were supposed to be analysed under the environment of Categorical grammar but expectations are found contrary to it as 25 examples from Urdu language were possible to be analysed after realizing:

- i. Application and analysis of Gapping and Ellipsis in Urdu embedded axioms have been found most complex phenomenon through syntactic and structural dependencies' perspective.
- ii. Meaning making process in the environment of Categorical Grammar required a holistic clarification through logical proofs which took long time for a single gapped clause to be analyzed considering prosodic components sidewise.
- iii. Time constraint remained a binding issue while analyzing the expected range of Urdu compound and complex axioms in Hybrid Type Logical Grammar through phrase structure rules.
- iv. Tree diagrams have been generated through Syntax Editor, which has its own limitations, such as the fact that the font style used in the tree diagram sometimes allows and sometimes restricts its conversion to Times New Roman for English or Jameel Noori Nastaleeq for Urdu.

5.3 Recommendations for Further Research

In the light of the findings of the study, the researcher suggests the following for further researches in this area:

- i. Future Researchers may figure it out to realize that some of our hypotheses are only partially correct. Proposed generalizations for Pseudogapping and Across the Board Movement need to be focused more to specify flexibility of movement of verbs outside gapped clauses and construct a logical meaning. Moreover, to what height does a verb can approach into its voice head.

- ii. The syntactic configuration of all nouns in the embedded environment of Urdu axioms is used to determine whether or not nouns in comparative clauses refer to the same entity via binding relationship. This aspect of relationship has not been worked out for Urdu language and becomes a barrier to find occurrences of gapping with all its variants in context of Categorical Grammar. The area of dominance precedence, c-command and government binding requires attention while doing synthetic analysis of Urdu gapped clauses to generate logical reasoning and eliminate ambiguous sentences used in routine.
- iii. Research needs to be conducted on ambiguous sentences in Urdu with reference to ellipses and gapping in order to show how these two syntactic phenomena (and their variants) lead to ambiguity.
- iv. Another study can also be conducted on Focused Phrase in Urdu embedded gapped Clauses.
- v. Further researchers can also work on use of Conjunctions and Disjunctions in Urdu which create a puzzled configuration for a TP or Finite Phrase to be elided.

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