CONSTRUCTION OF MAXIMAL COMPLEMENTISER PHRASE PROJECTIONS BY BINARY MERGER OPERATIONS: A COMPARATIVE MINIMALIST STUDY OF PUNJABI AND ENGLISH

By

Abdul Rafay Khan

NATIONAL UNIVERSITY OF MODERN LANGUAGES
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Abdul Rafay Khan

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Submitted By: Abdul Rafay Khan **Registration #:** 604/PhD/Eng/S16(Ling)

Dr. Ghazala Kausar _____
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Dr. Muhammad Uzair _____
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I Abdul Rafay Khan

Son of Dr. Abdul Qadir Khan

Registration # 604/PhD/Eng/S-16 (Ling)

Discipline English Linguistics

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ABSTRACT

Thesis Title: Construction of Maximal Complementiser Phrase Projections by Binary Merger Operations: A Comparative Minimalist Study of Punjabi and English

Strong Minimalist Thesis, as proposed by Chomsky (2000), holds that language is an optimal solution to the legibility (interface) conditions. As a recent development in Universal Grammar, it assumes that language, a component of human mind, is a computational system C_{HL} which meets the other systems of mind at their respective interfaces: Conceptual-Intentional (C-I) and Sensori-Motor (SM). C_{HL} provides a mechanism for valuation of the features of lexical items which are un-interpretable at the interfaces. Rooted in Strong Minimalist Thesis, this study attempts to conduct a comparative study of the derivation of Complementiser Phrase (CP) projections in two languages: Punjabi and English. The theoretical framework is borrowed from Chomsky (2008) where C_{HL} is based on a primary operation Merge and a secondary operation Agree which values the un-interpretable ϕ-features of T and *v** and structural case features of the NPs under probe/goal relation. The derivation completes in two phases C and *v**. This is an exploratory study which uses qualitative method of analysis. The data is collected from the authentic sources of grammar of both languages and divided into different types with respect to different categories (each constituting a separate section of analysis): v_{def}, v^*, T_{def}, Adjuncts, and wh-/k-expressions. The schematic derivation of a structure is presented in the form of set configurations. Rigorous analysis of the data yields that derivations with nominative subjects are obtained by somewhat similar mechanism in the two languages; however, the ergative subject derivations of Punjabi are obtained differently. Ergative is an inherent case sourced from *v** to the third person subjects of unergative and transitive CPs in perfective derivations. The ergative case does not render *v** inactive for further Agree. Unlike English, Punjabi is a wh-in-*situ* language where the apparent movement of k-expressions is not because of wh-dependencies. Based on key findings, this study proposes that owing to different assignment mechanisms a functional head (e.g., *v**) may assign both structural and inherent case in one derivation. Furthermore, this study proposes the mechanism of an Internal Pair Merge which may contribute significantly for future cross linguistic studies aiming to resolve the free movement of certain constituents in different languages.

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LIST OF ABBREVIATIONS

A	Argument
A-Position	Argument position
A’	Non-Argument
ADJ	Adjective
ADJ	Adjective Phrase
Aux	auxiliary
C	Complementiser
C_{HL}	Computational System of Language
CFC	Core Functional Category
C-I	Conceptual Intentional
CL	Cartesian Linguistics
CP	Complementiser Phrase
D	Determiner
dat	Dative
DC	Dependent Case
DO	Direct Object
DP	Determiner Phrase
DS	Deep Structure
EA	External Argument
ECM	Exceptional Case Marking
EF	Edge Features
EM	External Merge
EPP	Extended Projection Principle
Expl	Expletive
f/fem	Feminine
Fut	Future
gen	genitive
IA	Internal Argument
IM	Internal Merge
Imperf	Imperfective
Inf	Infinitive
Infl	Inflection

LCA	Linear Correspondence Axiom
LA	Lexical Array
LP	Locality Principle
m	masculine
MP	Minimalist Program
MI	Minimalist Inquires
N	Noun
N/nom	Nominative
NP	Noun Phrase
NTC	No Tampering Condition
Obj	Object
Φ-features	Phi-features (person, number, and gender)
Perf	Perfective
PIC	Phase Interpretability Condition
PLD	Primary Linguistic data
pl	plural
ppl	participle
PS	Phrase Structure
Prst	Present
Prog	Progressive
s	singular
SM	Sensori-Motor
SS	Surface Structure
SO	Syntactic Object
Spec	Specifier
Subj	Subject
Suf	suffix
Θ-roles	Thematic (theta roles)
T	Tense
T_{def}	The T of non-finite derivations
T_{comp}	T with complete set of ϕ-features
TP	Tense Phrase
UG	Universal Grammar
V	(Main) Verb

v	Light verb
*v**	Light verb of a Transitive Predicate
VP	(Main) verb Phrase
*v*P	Light verb Phrase

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DEDICATION

I dedicate this study to Hazrat Muhammad (Sallallaho Alaihi Wasalam), His Beloveds, His Devotees, and His Ummah.

CHAPTER 1
INTRODUCTION

1.1 Background of the Study

1.1.1 Universal Grammar-an overview

Universal Grammar (henceforth UG), in its 20th-21stcentury sense, means an innate component of human mind which enables him/her, even at a stage of infancy (i.e., when exposed to a very little experience), to develop a computational/derivational system that is capable of generating infinite number of structures with finite input. It can be traced back in human history since man started to deal with language as a phenomenon of nature that could be studied by adopting a scientific approach; however, its current enterprise can be largely attributed to Chomsky's six and a half decade long (since its beginning in 1950's) effort of developing a natural science of language that is based in human biology and that has to deal with the growth of language in individual and its evolution in human species. The formative influence, in the basic approach and method, on the current enterprise of UG can be traced in the studies of 17th century philosophers whom Chomsky (in his several works) terms *rationalist group*. In a very significant work *Cartesian Linguistics (CL),* Chomsky (2009) discusses how the *rationalist* scholars adopt a *nativist* or *internalist* approach in assuming, while studying human mind, that language, along other components of human mind, can be best studied as a natural object because it is the output of the internal growth of human mind. The *nativism* and *internalism* of such scholars is comparable to *externalism* of the *empiricists* who assume that the components of mind are the result of external influence on mind. The dichotomy of *internalism* and *externalism* is at the core of understanding the contrastive views of UG (an I-language approach) and traditional grammar (an E-language approach). As the title shows, Descartes is given a special esteem in *CL* not because of laying down a natural science of

language, but because of proposing natural science methods which helped Chomsky in developing a natural science of language.

Mcgilvray (2017, p. 92) observes that "Natural sciences typically deal with phenomena out of reach of direct observation and more generally of our everyday (commonsense) conceptions of things and events" ……, hence (they) "are postulated formal theories of hidden phenomena". It implies that the intuitions rendered by surface level features of language data do not suffice in reaching the hidden phenomenon behind language which has undergone several thousand years of evolution as a genetic endowment. Relying on directly observable evidence and assuming that influence of some external factors is enough to reach any conclusion about language can hardly yield a natural science of language. Hence, the study of language as a natural science should satisfy certain conditions as other sciences do.

According to Chomsky (1965), the major conditions which a theory of UG must satisfy to be a natural science of language are: descriptive adequacy, explanatory adequacy, universality, simplicity, providing explicit formal statements, and accommodation to other sciences. Descriptive adequacy demands that UG must provide tools for adequate description for any possible human language. A theory is unacceptable, if it provides apparatus "to describe the grammar of English and French, but not that of Swahili and Chinese" (Radford, 2004, p. 3). At epistemological level, this adequacy demands from UG to state what is the innate component which enables mind to develop a particular I-language. In this way this condition accommodates the variation among languages. On the other hand, explanatory adequacy deals with the invariant aspect of the faculty of language (Chomsky, 2000, p.92) which is related to the initial state. To achieve the descriptive adequacy a theory of a language L must characterize the state attained (i.e., a particular language) while to achieve the explanatory adequacy, a theory of language must characterize the initial state of the faculty of language and must seek to explain how it comes to map the human experience to the attained state (Chomsky, 1993, p. 3). The difference between the two adequacy conditions is clear in that descriptive adequacy seeks apparatus to describe the attained states (i.e., the particular I-languages), while explanatory adequacy characterizes the initial state common to all infants of the

world. The latter condition is related to find answers to questions such as how and why a child acquires a language effortlessly with the help of initial state of faculty of language. There has been a perpetual tension between the two conditions which is discussed after a brief delineation of the other conditions.

Universality, as it emerges from the two adequacy conditions, descriptive and explanatory, does not mean the uniformity of the attained states, rather it means the universality of language acquisition system (i.e., the initial state) which enables a child to learn any language he/she is exposed to. Universality of the output is a sheer impossibility in the presence of varying input experiences, but universality of the initial state is a necessary condition which has borne fruit in developing a natural science of language.

Simplicity also emerges naturally from the requirement of explanatory adequacy as the swift development of language in a child, who is exposed to a very little experience of the external world, entails that the mechanism of the faculty of language must be governed by very simple universal principles instead of intricate and complex apparatus that would be of no help to a child in effortless acquisition of language. A theory of grammar enriched with a number of complex rules for varying languages and varying constructions cannot answer the so-called Plato's problem: how a child acquires language.

Last but not the least condition: accommodating the science of language to other domains of science is a phenomenon that has been developed in relatively recent years as compared to the other conditions. The early concern of explanatory adequacy was to address the basic issue of language acquisition in a child but with the development of the UG theory on basis of simple and universal principles has urged Chomsky (2001b, subsequent works) to go beyond this adequacy level to address issue of much wider relevance: the evolution of the human faculty of language over the years of human development as a species (i.e., how and why does the language faculty acquire its current form?). This urge led Chomsky to stipulate three factors around which his future research would revolve: i) genetic endowment, ii) experience, and iii) Principles not specific to the faculty of language (Chomsky, 2005, p. 6). By the third factor, he assumes that the

faculty of language possesses the general properties of the other biological systems; hence, the principles governing language should be accommodated to the general principles of nature instead of particular principles that can isolate language from the other phenomena of nature.

The earlier works of Chomsky (1955, 1957) cannot boast of being Universal Grammar enterprises in the current sense of the term which attempts to promise all necessary conditions required to be a natural science of language. The earlier focus was, in fact, on the application of mathematical formalism and simplicity of grammar. Both these virtues were lacking in pre-Chomsky paradigm. Despite of rendering the language particular rules simpler and applying mathematical tools of recursion, the rules of grammar were still both language specific and construction specific. Not only different languages required different generative rules of grammar, but different constructions in one language required different rules for their generation. The notion of simplicity was also problematic which led to a wrong account of explanatory adequacy. A child's mind was assumed to possess an internal simplicity which guided him/her to set the simplest grammar where symbol count was the parameter to measure simplicity. The initial structure that had to provide the grammar was language specific and highly intricate. It was a beginning towards but by no means a UG.

There was as an ongoing effort in attaining universality, simplicity, and generality in the description of grammar. In *Aspects* model (Chomsky, 1965) several levels of representation were reduced to Deep Structure (DS), Surface Structure(SS), semantic interpretation and phonetic representation. The DS was submitted to the semantic interpretation and the SS, obtained by the transformational component, was submitted to the phonetic representation with the view that the task of grammar was to relate semantic interpretation to phonetic representation. Another contribution of this model was the simplification of the mechanism of generating complex structures. In the 1957 model, the Phrase Structure (PS) rules could generate the mono-clause structures, but the recursion at transformation component could yield more complex structure. This was simplified in *Aspects* model by stipulating that the recursive character is present at basic PS level that can generate complex structures. However, PS rules were themselves problematic in

lacking generality and universality. Even one rewrite PS rule could not describe the construction of one category in all contexts (e.g., the rewrite rule VP= V+NP could not describe the intransitive VP's which did not take an NP complement, so NP was not obligatory).

In order to eliminate the PS rules which were redundant and a hurdle in a way of achieving descriptive and explanatory adequacy, Chomsky (1970) introduced X-bar schema based on a general rule X' → X YP that could be generally applied to different constructions. The X could be N, V, or P etc. The elimination of PS rules removed a big hurdle and paved way for a theory of grammar which could satisfy the universal aspects of human language by providing general principles accorss languages. However, the tension between descriptive and explanatory adequacy was still perpetual and no systematic framework was provided to encapsulate language universals and language variants in a single theory. A theory of UG was just a notion without a proper framework stipulated. The efforts during the first three decades contributed to the later achievements of the theory of UG, but the proposals were full of problems which needed to be addressed.

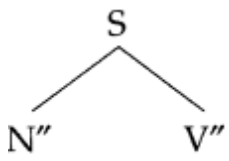
The expectation from a science of language was to characterize the nature of the innate universal component that was available to every human infant for an effortless acquisition of language, and to characterize the variation among languages in the same theory. As mentioned earlier, the universality does not mean uniformity of output. The languages after all varied in word order, accent, and morphology etc. The difference in experience provided to a child resulted in this variation. The universality of language means the presence of a uniform initial state which enabled the child of every I-language to develop an initial competence of language on the basis of universal principles. The presence of simultaneous existence of a universal component and language variants posed a tension between descriptive and explanatory adequacy. This tension was resolved by the introduction of Principles and Parameters (henceforth P&P) approach in Chomsky (1981b). This theory stipulated that there are universal principles common to all languages (e.g., *headedness*: every phrase is the projection of a head word. This can be represented by the configuration XP=X---YP wherein X is the head of XP which may be

any category V, N, or P and YP is the complement of X). This principle holds equally for an English child and a Punjabi child, but the order of head and complement may vary along binary parametric options: head first or head last. At the initial stage, the children of both languages will utilize the *headedness* principle in formation of phrases, but to attain later variant forms of their languages, both children will utilize parametric choices and set the order of head and complement according to the input provided to them. An English child puts head before complement and a Punjabi child puts head after the complement. In a similar way, a Japanese or an Urdu-Hindi child puts the head after the complement. What is universal in all the cases is the *headedness* principle ensuring that a phrase is formed by a head's selection of a complement. The order of phrases is subject to parametric setting according to the input provided to the child of a particular I-language. Hence, the tension between the two adequacy conditions (descriptive and explanatory) is solved under one theory. With some modifications and variation of scope, P&P is continued to be the adopted in the current framework of UG.

The first version of P&P appeared in the form of Government and Binding Theory (hence forth GB) (Chomsky, 1981a) which accounted for different phenomena of grammar (e.g., case, thematic-roles (hence forth θ-role), binding facts etc.) under their respective modules of grammar (i.e., Case theory, Theta theory, Binding Theory etc.). Every module of grammar was responsible to define constraints on the separate phenomenon it dealt with. The transformational component was reduced to a single principle *move α* with constraints imposed on it by the modules of grammar. The strength of GB theory lay in the improvement in the X-bar notation. During 1970's the complete clausal skeleton was represented by a configuration where S headed the NP and VP as shown in figure 1.

Figure 1

Represenation of Clausal Structure before 1980s

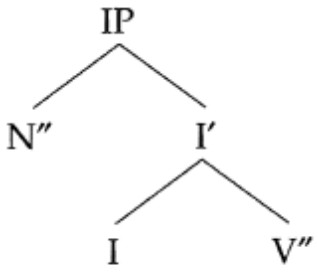


(Cook & Newson, 2007, p. 100)

A problem with the schematic configuration in Figure 1 was that S had no head, so Chomsky (1981a, p. 164) solved this problem by proposing: “let us assume further that VP is a maximal projection and that S-system [i.e., the clause] is not a projection of V but rather of INFL”. This was the beginning of realization of the significance of the functional categories complimentizer (C), inflection (I) or Tense (T) and determiner (D) which were earlier considered minor categories with little or no role in semantic interpretation. In the mid of 1980’s, the practice of representing the clausal structure became common according to figure 2 where a complete clausal unit was the projection of I.

Figure 2

Represenation of Clausal Structure according to Chomsky (1981a)

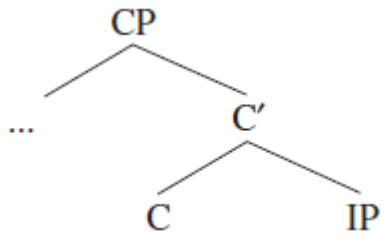


(Cook & Newson, 2007, p. 101)

In a further development, the role of C was acknowledged as pivotal in the projections of a clause as C was the category which defined the force of a clause as interrogative or declarative. So, Stowell (1981) proposed that C not I was the head of an S-system [i.e., clause] as represented in figure 3.

Figure 3

Represenation of Clausal Structure according to Stowell (1981)



(Lasnik & Lohndal, 2013, p. 46)

Even after the complete elimination of PS rules from grammar, improvement in X-bar theory and simplification of transformation to the simplest rule *move α*, the overall mechanism was still redundant which could not fulfill the requirement of explanatory adequacy. Owing to this problem, GB was not the right place for P&P. It could not be expected from a child to possess such a complex mechanism of grammar which needed a separate module/theory for dealing a particular phenomenon (e.g., case, theta-role assignment) of the grammar. There were four levels of representation in the theory: DS, SS, LF, and PF, the first two of which were deemed redundant and were thought suitable for elimination. The virtue of *simplicity* was beyond the reach of a GB style theory. This theory prevailed the horizon of UG during 1980's and early 1990's, but soon the urge for further modification of P&P approach and simplification of the mechanism of grammar, by elimination of all redundancies, led Chomsky (1993, 1995b) to introduce Minimalist Program (MP) for syntax.

1.1.2 Minimalism in Universal Grammar

The redundancy and complication in grammatical apparatus could not be avoided until the UG reached the stage of stipulating the GB theory. It penetrated into the theory sometimes in the form of language and construction specific PS rules; sometimes in the form of extra levels of representations; and sometimes in the form of extra modules of grammar. The tension between descriptive and explanatory adequacy was to a satisfactory extent solved by the proposal of P&P approach; however, the theory of grammar still contained some complexity which was in the way of an achieving an

explanatorily adequate framework of grammar. In the late 1980's, Chomsky felt an urge for economy of grammatical apparatus which should have been ensured at two levels: *economy of representation* and *economy of derivation*. The former had roots in Full interpretation principle (Chomsky, 1986b) which required that every symbol in the derivation must be interpretable. This notion of economy further led to conditions like *Inclusiveness* which ensured that no extra elements should be added in the course of derivation. The economy of derivation led to *Minimal Link Conditions* (MLC) which demanded that derivation should be complete in the shortest available steps. In the following part of this subsection, the important proposals of the *MP* (Chomsky, 1995b) are delineated which mark the program as a significant development in the theory of UG.

Language as a derivational/computational procedure links the two performance systems semantic and phonetic through two interfaces conceptual-intentional C-I and articulatory-perceptual/Sensorimotor A-P/SM respectively (These performance systems are external to language but internal to human brain). As a perfect system faculty of language must satisfy the conditions imposed by the interfaces known as *bare output conditions*. To satisfy these conditions FL must be reduced to the simplest possible computational operation: *Merge.* The *Strong Minimalist Thesis* (SMT) holds that language is a perfect solution to the interface conditions. As a basic principle "each language yields an infinite array of hierarchically structured expressions, each interpreted at the two interfaces" (*preface to the 20th anniversary edition* of Chomsky, 1995b/2015, p. ix).

A particular language L, an instantiation of the initial state of the language faculty, constructs a pair of expressions (π, λ) as a generative procedure. These expressions are submitted to A-P/SM and C-I interfaces. The π is Phonetic Form (PF) representation and the λ is Logical Form (LF) representation. If these expressions receive interpretation at the interfaces according to *full interpretation* condition, they are considered to consist of legitimate objects. Under minimalist assumptions, interpretation at the interfaces (i.e., legibility condition) is an obligatory requirement which the computational procedure of language has to meet; hence, no other levels of linguistic structures are required other than the interface levels. D-Structure and S-structure are

eliminated from the language design as no conditions applicable at them are found necessary for.

The elimination of redundancy from the language design and the introduction of the minimalist assumptions led Chomsky to eliminate X-bar theory in favor of *Bare Phrase Structure* model which is based on *inclusiveness condition:* there are no bar levels and no intermediate projections implying that no extra elements are added in the course of derivation. Eliminating the conventional assumptions in the new approach to phrase structure, it is assumed that there is no distinction between a lexical item and a head. A consequence is that an element can be both X^o and XP. *Bare phrase structure* led Chomsky to non-acceptance of Kayne's *Linear Correspondence Axiom* (LCA) on the conceptual grounds as the LCA relied on X-bar theory in its conceptual component. The essential character of C_{HL} is independent of the sensorimotor interface. It led to the assumption that linearization is not the burden of syntax as maintained in Chomsky (2013, 2015).

The economy considerations require that C_{HL} cannot bear the burden of the whole lexicon along with it. To avoid this impossibility, the concept of numeration N is introduced. N consists of an array of lexical items selected from the lexicon of a language for a particular derivation. C_{HL} may access a lexical item LI from N, reducing its index, with all its features defined in lexicon or may select some already formed syntactic object. By the computational operation Merge, which satisfies output conditions, C_{HL} takes two elements α and β and forms a new syntactic object K form them as K= { α, β}. To identify the properties of the newly formed set at the interfaces, a label of K is required according to the configuration K= {γ, {α, β}} where γ is the label which may be either α or β depending on which of the two constituents project.

The free operation *move α* of the GB theory also undergoes a radical change under the economy considerations strengthened by basic minimalist assumptions. No move operation is possible until motivated by some requirement yielding last resort as a principle of economy in all such operations. The minimalist assumptions led to stipulate that displacement property of language is always motivated by some morphological features which are un-interpretable at the C-I interface. These features must be checked

for the derivation to converge at the respective interface. Hence, the move operation is based on *move F* instead of *move α*. If K is the target to which some syntactic object α moves, this operation is legitimized by some features of K which must be checked. It implies that some unchecked features of K allow the movement of α as a last resort. The operation Move, induced thus, may check some features of K or some features of both α and K. The question arises if the displacement property is motivated by features of the syntactic objects why do the whole syntactic objects move to the target. This is required by the convergence of computation at phonetic interface. The Move F *pied-pipes* along with it enough material which is required by the phonetic component. In this way, the Move operation is governed by economy considerations of the minimalist assumptions and satisfies the bare output conditions imposed by the two interfaces.

1.1.3 Phases Approach: Post 2000 Minimalist Framework

MP was a significant progress towards achieving an optimal design of language; however, there were problems in the overall design specifications provided by the program, particularly regarding checking theory and spell out. It is a requirement of C-I interface that after checking some un-interpretable features, these features become invisible at C-I interface and inaccessible to C_{HL}, but remain visible at SM interface. The basic problem in MP was that spell-out was assumed to occur after completion of the whole derivation. In that way, checked features could not be transferred to SM interface where their visibility was required. Furthermore, there were separate cycles required for LF, narrow syntax (NS), and PF. This was not only redundant, but conceptually problematic. To cope with such problems, Chomsky (2000) introduced a derivation *by phase* approach where all separate cycles were merged into one cycle. The elimination of separate cycles resulted in elimination of distinction between overt and covert operations. It is supposed that derivation completes in shorter steps: *phases*. After the completion of feature valuation/checking in a *phase*, this unit is transferred to the C-I and SM interfaces. Hence, spell-out occurs at multiple stages: at least in two stages in a mono clause transitive CP. The *v** and C are considered the phase heads. T is not a phase head as literature provides evidence that its features are derivative from C. As this study adopts *phases* approach to derivation, the salient features of this approach are delineated in section 1.1.4.

1.1.4 The Present Study

Under the theory of UG, this study aims to explore the derivation of complete sentence equivalent clausal units: Complementiser Phrases CP's in two of the widely spoken languages of the world Punjabi and English- the former a split ergative language while the latter a canonical nominative language. The spot light for this study is SMT: "language is an optimal solution to legibility conditions" (Chomsky, 2001, p. 106). Language as a faculty of human mind and a computational/derivational procedure constructs a pair of expressions which are accessed by two performance systems C-I and S-M through their relevant interfaces (i.e., the former puts language to use for interpretation as a system of thought while the latter puts the language to external use as a system of phonetic symbols utilized for the purpose of communication). The primary concern of language is to satisfy the conditions imposed by the C-I system; satisfaction of the requirements of the SM system is an ancillary concern which makes C_{HL} relatively independent form this system.

This study adopts Principles and Parameters (P&P) approach, in its current minimalist version, which makes the comparative study of two languages not only a viable task, but provides a framework for accommodating the universal and variant aspects among different languages under one umbrella. This approach is helpful in reducing the tension between explanatory and descriptive adequacy- the two conditions which a study of language must meet. P&P provides a solution for the apparent tension between two levels by proposing that the initial stage of an I-language is governed by the universal principles common to all I-languages of the world while this initial stage maps experience of a particular I-language to an attained state which demonstrates variation among different I-languages depending upon the difference of their experience. The accommodation of simultaneous variety and universality renders a feasible framework to UG research. This study adopts the current version of P&P approach as stipulated by Chomsky (2000, subsequent works) who follows Hagit Borer's view that parametric variation among languages is a matter of the features of lexical items and for computational procedure this variation is restricted to morphological properties which are primarily inflectional.

In line with the basic minimalist assumptions made about UG research in post-2000 research of Chomsky (2000, 2001a, 2001b, 2004, 2005, 2008, subsequent works), with ongoing modifications and improvements in details, it is assumed that UG provides a set of features (linguistic properties) F and a computational procedure C_{HL}. For derivation of convergent syntactic structures, C_{HL} makes a onetime access to a subset of F and assembles them into lexical items. C_{HL} can neither access the whole set of F nor can it bear the burden of the whole lexicon along with it all the time; therefore, an array LA of lexical items also called *numeration* is selected and accessed one time by the C_{HL}. C_{HL} consists of a primary operation Merge which is not only the property of computational system of language, but all possible computational systems are based on Merge. This property of C_{HL} accommodates the study of language to third factor (Chomsky, 2005, p.6) which requires that the study of language should abide by the general principles of nature. The automatically induced Merge takes two syntactic objects the LI's or already formed Syntactic objects (SO's) and makes new syntactic objects from them under *Inclusiveness conditions*: no new objects (i.e., indices, bar levels, levels of projections, traces etc.) can be added in the course of derivation. The recursive operation Merge is successive cyclic in nature. Any other operation needs a justification for its induction.

There are some features of LI's which are un-interpretable at C-I interface. These appear a *prima facie* imperfection in language design (Chomsky, 2000), but the (Chomsky, 2001a) *Internal Merge* operation (i.e., the displacement property of language: an operation composite of *External Merge* and *Agree* and equivalent to the Move operation of the previous frameworks) is there to eliminate these un-interpretable features. Hence, neither the operation *Internal Merge* nor the un-interpretable features are imperfection; rather they are part of fulfilling the legibility conditions imposed by interface conditions. These un-interpretable features include: ϕ-features of the functional categories C, T and *v* and structural case features of the nominal present at the subject or object positions. These features may be checked/valued under *probe-goal* relation induced by Agree operation where both *probe* and *goal* may remain *in-situ* (if only Agree is required), but may also undergo Internal Merge if EPP features (i.e., obligatory for T but optional for C and *v*) also need to be satisfied.

It is a property of the feature checking mechanism that as soon as the features are checked they become invisible at C-I interface and inaccessible for C_{HL} computation [+Active, - Active], but remain accessible to Sensorimotor interface. This property poses problems for the Spell-out model proposed in MP where Spell-out was supposed to occur at a single point. According to this approach the deleted features must remain until spell-out. Chomsky (2000, subsequent works) provides a solution by suggesting multiple spell-out models. The derivation completes in stages (i.e., *phases*). Upon its completion, the phase is spelled out to the interfaces for interpretation. The spell-out to the sensorimotor interface erases the un-interpretable features which become inaccessible for C_{HL} and invisible at C-I interface. This cyclic approach eliminates the redundancy of three separate cycles: cycle of narrow syntactic derivation, LF cycle, and PF cycle; instead, the derivation proceeds in a single cycle without any further requirement of overt and covert distinction between narrow syntax and LF cycle. The phase levels are *v** (i.e., the functional category with complete argument structure) and C (i.e., the functional category which contains factors governing tense, force, and event structure). T is not a phase; rather its properties are derivative from C.

Assuming the derivation by phase approach, this study aims to conduct the comparative analysis of complete clausal units (i.e., CPs) which are derived by the computational procedure C_{HL}, based on the operation Merge (Chomsky, 2008), in the two languages: Punjabi and English. The primary focus is to conduct the minimalist analysis for a number of phenomena in the two languages by studying how the computational procedure in the two languages provide an optimal solution to the legibility conditions imposed by the interfaces. The yardstick adopted for studying this basic question is the mechanism of valuation/checking of the features which are un-interpretable at the interfaces which include the ϕ-features of CFC's C, T, and *v*/*v** and structural case features of the nominal. Furthermore, analysis of the data provides fruitful results for the characterization of parametric variation in the features of the CFC's of the two languages; suggests solutions to some problems regarding *wh-dependencies* and free word order in *wh-in situ* languages like Punjabi; and renders some general solutions to accommodate the ever problematic phenomenon *adjunction* which has remained problematic for UG research.

The rationale for this comparative study is intrinsic in the rationale of UG which has motivated a wide range of cross linguistic research since a core part of UG various approaches has involved comparative syntax and used comparative data to refine theoretical underpinnings (Lasnik & Lohandal, 2013, p. 28). Providing a rationale for comparative syntax under UG, Roberts (2017) emphasizes that the basic assumption of UG: there must be something universal among languages naturally leads to ask what is universal as everything may not be assumed to be universal. "There must be many features of English which distinguish it from some or all other languages. What these are is a matter for empirical investigation" (p.47). The empirical investigation of this study endorses Roberts claim as the empirical evidences from one language have proven beneficial for resolving the problems in the other language. For instance, the problematic status of *by-phrases* in English passive structures (Collins, 2005) has been identified, in this study, with the help of some overt clues provided by the counterpart Punjabi data.

1.1.5 Some Contra Merge Approaches

This section is dedicated to some worth noting studies which counter the very nature of operation Merge and some other concepts like *phases* as stipulated by Chomsky (in his several works). Beyond any particular concept, Postal (2003) criticizes UG scholars for the way they put their ideas: by using such terminology as *(virtually) conceptually necessary* and *inevitable* they attempt to give a privileged status to the properties of their own ideas. He proposes that the place occupied by such rhetoric should be filled by serious argument and evidence. This proposal has helped this study in rephrasing the expressions at some places (This study owes to Dr. Borsley for a similar proposal which has helped in rephrasing rhetorical expressions).

Countering the very nature of Merge, Postal presents a linguistic model, instantiated in (1) below, to show "how all and only the allowed combinations can be precisely specified with no analog of a Merge operation whatever" (Postal, 2003, p. 606). The total lexicon for the linguistic model in (1) is: {my, father, father's, died}.

(1)

(a) My father died.

(b) My father's father died.

(c) My father's father's father died.

(d) My father's father's father's father died.

(e) My father's father's father's father's father died. (Postal, 2003, p. 606)

He observes the following assumption about the above infinite linguistic model.

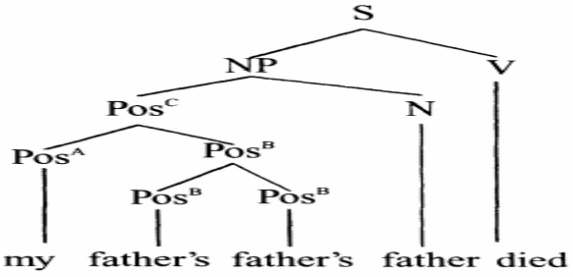
I assume that the relevant constituent structures are defined by the following constituency assumptions. Full sentences involve trees whose root nodes are labeled S and consist exclusively of NP + Verb. Subjects of clauses are defined by nodes labeled NP. Intuitive possessor phrases of the form *my* are defined by nodes labeled Posa, intuitive possessor phrases of the form *father's* are defined by nodes labeled posb, and there is a larger possessive constituent defined by nodes labeled Posc. (Postal, 2003, p. 606)

The tree diagram in (2) = Figure 4 illustrates the above assumption.

(2)

Figure 4

Representation of Linguistic Model according to Postal (2003)



(Postal, 2003, p. 608)

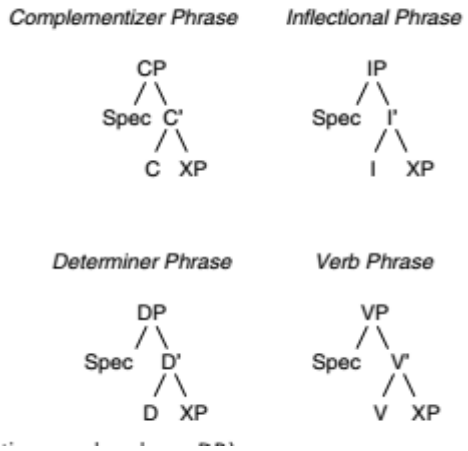
A question may arise here with particular reference to the constituent Pos^B. As evident in figure 4 Pos^B and Pos^B combine to from a constituent *father's father's:* Pos^B. What type of constituent it is and in what terms it can be defined? The question is of crucial significance given that the Pos^B bears the recursive role in the above-mentioned linguistic model as it may appear in infinite numbers *father's father's father's*

father'….and so on. There seems no problem in expecting from a constituent in a syntactic structure that it must form a separately identifiable unit (e.g., a phrase). The constituents involved in formation of sentences in (1) may be compared with phrase which is defined by Luraghi and Parodi (2008) as "groups of words or constituents that form a syntactic unit other than a sentence or a clause. There are various types of phrases, depending on their head": noun phrase (NP) as *happy girl*, verb phrases (VP) as *drink milk*, adjective phrases (AP) as *very nice*, adverbial phrases (AdvP) as *slowly*, and prepositional phrase (PP) as *for you*. The phrases illustrated in (3) =*Figure 5* below is identifiable by their heads. Comparing phrases in (3) to Pos[c] *My father's father's father'* in (2), it seems difficult to identify the latter with any of the syntactic units: word, phrase, and clause.

(3)

Figure 5

Different Types of Phrases



(Luraghi & Parodi, 2008, p. 152)

How the sentences are formed? Does sentence formation is processed word by word, phrase by phrase, or by some other constituents? The answers to these crucial questions have divided generative and non-generative grammars. Phrases demonstrated by Luraghi and Parodi (2008) are the essential syntactic units in generative grammar; however, there are contrary views maintained in non-generative traditions. Sag and Wasow (2011) advocate Constraint-based *lexicalism* (CBL) grammar which views that

sentence understanding and production (i.e., performance) is processed *incrementally* in word by word (or even syllable by syllable). They seek evidence from English echo question (4).

(4) Speaker A: Bacigalupo is coming to dinner tomorrow night.

Speaker B: Who did you say is coming to dinner tomorrow night?

********** (Sag & Wasow, 2011, p. 10)

In (4), it may be expected that speaker A may understand, somewhere between the asterisks, speaker B well before the utterance is complete. Words bring with them the lexical information which tells directly about the sentence structure, "about the phrases that the words are part of and about the neighboring phrases that they combine with syntactically" (Sag & Wasow, 2011, p. 10). Furthermore, words contain partial information about the meanings of the phrases and sentences. Thus, incremental computation in both syntactic and semantic structure is a natural characteristic of such grammar. It seems reasonable to assume in case of some echo question that after the utterance of some initial words speaker A may understand speaker B, but the similar assumption seems difficult if the order of utterances is reversed in a usual situation as in (5).

(5)

Speaker B: Who is coming to dinner tomorrow night?

****

Speaker A: Bacigalupo is coming to dinner tomorrow night.

In (5), it is not sure that the same speaker A would understand speaker B at the similar position.

Seeking evidence from language performance and comprehension, Sag and Wasow (2011) attempt to reverse the relationship between competence and performance components of human language as spelled by Chomsky: "investigation of performance will proceed only so far as understanding of underlying competence permits" Chomsky

(1965, p. 10). Countering the approach, they maintain that "empirical facts about various aspects of performance can and should inform the development of the theory of linguistic competence. That is, compatibility with performance models should bear on the design of competence grammars" (Sag & Wasow, 2011, pp. 2-3). They view that performance must confirm the competence theory. The status of constraint-based lexicalist grammars is spelled in the following quote.

> Given that constraint-based lexicalist grammars, as of this writing, also have much better systematic empirical coverage than any of their transformational competitors, they may in fact provide the first legitimate grounding for the competence-performance distinction, upon which all work in generative grammar since Chomsky 1965 has crucially depended. (Sag & Wasow, 2011, pp. 2-3)

Within Minimalist framework, Radford (2009) reflects critically on the concept of feature inheritance as proposed in Chomsky's recent works on *phases* wherein it is supposed that a phase head C or *v** enters into derivation with un-interpretable features and the non-phasal heads: T and *v* inherit these features from the phase heads. The first argument put in this respect comes from defective T clause, as exemplified in (6) below, in which defective T is assumed to enter into derivation with un-interpretable person features. It seems problematic in that the defective T is not selected by C.

(6) He would seem [TP [T to] have left].

The problem may be resolved by focusing on the fact that a defective T can't be a probe to value the un-interpretable case features of a goal. The defective T itself requires a probe with a complete set of ϕ-features (number, gender and person) to value its un-interpretable features. Only a T selected by C can be a probe to value the un-interpretable features of a goal. Chomsky's assumption may be modified that the T with a complete set of ϕ-features (number, gender and person) can borrow these features from a complete C head, any T element entering into derivation with person features of its own would be defective unable to value the un-interpretable features of a goal.

Radford also identifies feature inheritance in transitive structures like (7) about which he assumes that verbs contain additional complements other that the direct object.

(7)

a. They will roll *the ball* down the hill.

b. [*v*P they [v ø] [VP the ball [V roll] down the hill]]

c. [*v*P they [v ø] [VP down the hill [V roll] the ball]]

d. [*v*P they [v ø] [VP [V roll] the ball] <down the hill>]

Radford assumes about 7 (a) that the verb has two complements: the italicized direct object *the ball* and underlined additional complement *down the hill.* If case assigning features/agree features are assumed to transfer from V to *v*, there seems a problem in assuming (b) as the direct object would not fall in the domain of V to receive the case. Assuming (c) would be problematic as it requires a lot of movement to obtain the right surface order. The problem seems to emerge from the wrong assumption about the number of complements in the structure. The additional complement *down the hill* is in fact an adjunct which does not depend on V for case assignment. In that case, instead of (b) and (c), (d) would be the order of derivation resolving the problem of merge of two complements.

1.1.6 A Brief Introduction to Punjabi and English

This sub-section provides a brief introduction to Punjabi and English which are selected for comparison in this study.

Mann et al. (2011) observe that Punjabi is spoken in the Punjab, a geographical-cultural region that connects South Asia with Middle East and Central Asia. The region is stretched between Multan, a major city of Pakistan, in the southwest and Delhi, the capital of India in the southeast. The name Punj-aab came into use in mid 16th century and refers to the five rivers: Satluj, Ravi, Jehlum, Chanab, and Sindh. Punjabi is an Indo-Aryan language, from Indo-European origin, like its neighboring languages: Bengali, Urdu, Hindi, and Marhati etc. The core of these languages had descended from Sanskrit, the Prakrits, and the Apabhramsha languages that developed in North India beginning around 1000 B.C.E. According to Cardona (2014), Indo Aryan languages, also called Indic languages, are sub-group of the Indo-Iranian branch of the Indo-European Language family. Shackle (1972, as cited in Shah 2015, p. 8) views that Punjabi is

directly related to English, being a member the same Indo-European language-family. It is more closely connected with other languages known as Indo-Aryan…..”

In one of the recent studies on Punjabi grammar, Shah (2015) mentions three commonly maintained views about the origin of Punjabi language.

a. “Spoken Sanskrit changed into Prakrit and (A)Upabharmaasha and gave birth to modern Indo-Aryan languages; Punjabi in Punjab, Sindhi in Sindh, etc.
b. The Indo-Aryan Languages sprung directly from the Vedic-languages of the Aryans.
c. Punjabi is a Pre-Aryan indigenous (Harapaan) language-linked to the Munda Group and Dravidian Languages”. (Shah, 2015, p. 7)

Comparing the three views, Shah (2015) mentions Grierson (1916) and Shackle (1972) among the major scholars who upheld the first view (Bhatia (1993) has drawn the genealogy of Punjabi accordingly.). The second line of view has been adopted by Bhai Jodh Singh as mentioned in Sekhon and Duggal (1992) and Sidhu (Shah also mentions the names of Shareef Kunjahi and Principal Teja Singh among the scholars who consider Rig Veda to be the first Punjabi literary creation). Sidhu (2004, p.43) viewed that “the Vedic language was either based on the prevalent Punjabi or was greatly influenced by it.” However, a problem that the syntax of modern languages of the subcontinent is not related to the syntax of Sanskrit leads to the third view that Punjabi is the descendent of Pre-Aryan and Proto-Dravidian language. The third view has been supported by Khan (1959) and Faridkoti (1960, 1997). These scholars have identified a large body of common words in Punjabi and Dravidian languages.

Currently Punjabi is the first language of the Punjabis living in Punjab regions of both Pakistan and India. According to Shackle (2017) there are some 70 million speakers of Punjabi in Pakistan where Urdu script is used for writing this language-popularly known as *Shahmukhi*; and, there are more than 30 million speakers in India where *Gurmukhi* script is used which is different form *Devanagri* (used to write Hindi). Punjabi Diaspora is spread all over the world as its speakers constitute the third and fourth largest linguistic groups in Canada and United Kingdom respectively. Despite of a very large

number of speakers and rich cultural tradition, the standardization of Punjabi was inhibited by some historical factors which continue to hamper its progress even today. These factors include the lack of official recognition and different cultural preferences by the three major communities of India: Muslims, Hindus, and Sikhs. During the Mughal period, Persian was cultivated while during the British and the following period Urdu was given preference. In Pakistan, the official language of the province Punjab is Urdu. The modern period has witnessed the development of local dialects as strictly defined provincial languages in many cases, but this is taking a longer time in the case of Punjabi.

Like other languages Punjabi exhibits different dialects. Traditionally recognized dialects of Punjabi are Majihi, Bhatiani, Rathi, Ludhianwi, Doabi, Patialwi, Powadhi, and Malwi (Bhatia, 1993). Campbell (1991) maintains that Punjabi can be broadly divided into three major dialects: Central, the Majihi, spoken in Lahore and Amritsar; Northern, the Dogri, spoken in Nothern Punjab; and the Western dialects which gradually changes into Lahnda. With respect to syntactic and morphological variation, Bhatia (1993) points out linguistic variation across dialects with respect to two features: presence of an overt ergative *–ne* marking and the form of past auxiliary.

Table 1

Variation in Punjabi dialects with respect to ergative –ne case marking and form of past auxiliary

Subject	**Case clitic**	**Verb**	**Auxiliary (Dialect)**
Main	*-ne*	maariaa	sii (Majhi)
Main	Ø	maariaa	sii (Powadhi)
Main	Ø	maariaa	sii (Malwi)
Main	Ø	maariaa	saa (Dogri)
Main	Ø	maariaa	thaa (Kangara)
O	*-ne*	maariaa	Ø (Majihi)
Oh	*-ne*	maariaa	Ø (Powadhi)
Us	Ø	maariaa	Ø (Malwi)
Us	Ø	maariaa	Ø (Dogri)

(Bhatia, 1993, p.xxx)

It is evident in table 1 that Punjabi dialects exhibit linguistic variation with respect to ergative *–ne* marking which appears overtly on third person subjects of perfective

aspect clauses (a phenomenon discussed in detail in the subsequent discussion) and the form of auxiliary. The unusual presence of *–ne* on first person subject *Main (I)* in Majhi dialect and unusual absence of the same clitic on third person *Us (he/she)* in Malwi and Dogri dialects pose a problem which has been addressed in chapter 4. The variation in the form of past auxiliary, however, does not have any effect on syntactic process. Similarly, the variation in the form of 3rd person singular subject as *O*, *Oh*, and *Us* in the Majihi, Powadi, and Malwi and Dogri dialects respectively does not make any syntactic difference.

In recent history, the early tradition of Punjabi grammar is European as the first systematic effort of providing a grammar of the language came from Carey (1812) who attempted to formulate short rules that a learner could grasp for acquisition of this language. After Carey, the notable European contributors of Punjabi grammar were Newton (1896), Cummings and Bailey (1912), and Grierson (1916). Among the early native contributors of Punjabi grammar, Jain (1934) and Gangawala (1935) are noteworthy. Utilizing insights rendered by modern linguistics, Gill and Gleason (1963/2013) stipulate a framework based on Saussure's concept of linguistic structure wherein different elements "must be described in terms of their internal relationship and oppositions" (Gill & Gleason, 2013, pp. 11-12). They name this system as structural economy, or *Sanjam* ਸੰਜਮ in which the Punjabi language specific patterns could be understood by their internal relationship and opposition between the elements of this language instead of their comparison to other languages. Despite their significance for stipulating an early modern linguistic framework for Punjabi, their approach is susceptible in light of UG where the finding of some clues from one language have proven helpful in resolving problems in some other languages. In a recent study, Virk, Humayoun, and Ranta (2011) has endeavored to render an open-source grammar of the Punjabi language. Their Grammar framework is based on a division between abstract and concrete syntax in which the former provides general rules (i.e., independent of any language) and the latter provides language specific rules. Their endeavor is vulnerable to criticism owing to dependence on a redundant and complicated rule system.

Among Pakistani scholars, significant works on the Punjabi language have been rendered by Bdakhshani (1973), Mughal (2005), Khan (2012), Rehman (2013), Shah (2015) and Khan and Kausar (2017, 2019, 2021). Badakhshani (1973) provides a detailed Punjabi grammar divided in two parts *Sarf* (word form and structure) and *Nahaw* (sentence form and structure). Despite of possessing many virtues, his grammar cannot accommodate the difference between past and present tense with reference to perfective aspect owing to its utilization of relatively older framework. Mughal's (2005) grammar is too brief to serve the purpose of detailed syntactic analysis as he talks about only three parts of sentence: subject, verb, and object. Khan's (2012) contribution lies in informing that Punjabi has been written in five scripts: *Shahmukhi*, *Gurmukhi*, *Dave Nagri*, *Sindhi*, and *Roman*. However, he mentions that 90% of Punjabi literature has been written in the former two types. Rehman (2013) provides a very valuable treasure of Punjabi terms and compares them with their English and Urdu counterparts. Shah (2015) has attempted to provide a detailed grammar of Punjabi in a traditional framework. His grammar may be criticized in light of UG approach; however, his grammar may be a good source of Punjabi data as it utilizes more recent terminology for grammatical description.

In a recent overview of Punjabi language, Butt (2017) mentions Bhatia (1993) as a standard grammar of Punjabi. Of particular significance for this study is the inventory of Punjabi case markers provided by Butt (2017, p. 747). The important case markers include: nominative (no case marking, +subject + object); ergative (allows *–ne* marking, +subject - object); accusative (*-nu* marking, -subject +object); dative (*-nu* marking, +subject +indirect object); instrumental (*-kolo* marking on argument and adjunct subject); genitive (*-da/di/de* on subject (infinitives)); and locative (from) (*te/to*, argument, adjunct). Despite the difference in case markers, with only a similar *–ne* ergative marker, the case and agreement patterns in Punjabi appear to function very closely to Urdu-Hindi. The agreement is always with unmarked arguments (i.e., either subject or object). If no unmarked argument is available, the default masculine singular pattern is used as in *kuri-ne mundiaan-nu maria si*. It is evident that both subject and object are marked with *–ne* (ergative) and *–nuu* (accusative) post-positions respectively, so the V *maria* and the T *si* is in default masculine singular form. Punjabi is a split ergative language where ergative

case is sensitive to perfective aspect and third person subject. The detail of Punjabi case markers is provided in Table 2 below.

Table 2

Punjabi Case Markers

Case Clitic	Name	Grammatical Function
Ø	Nominative	subject object
-ne	ergative	Subject
-nuu	accusative dative dative	object subject Indirect object
-kolo	instrumental	argument adjunct
-da/di/de	Genitive	Subject
-te/to	Locative	argument adjunct

(Butt, 2017, p.747)

The following discussion delineates some important features of Punjabi verbs in light of the structures provided by Shah (2015) and Bhatia (1993). Of crucial relevance for a syntactic analysis is the occurrence of Punjabi verbs in sequence of a main verb (V) and a light verb (*v*/*v**). The occurrence of an overt light verb with the main verb is possible in both transitive and intransitive sentences. The main verb carries the lexical meaning and the light verb bears the morphological marking for the aspect and tense. This phenomenon can be illustrated by the examples (1) to (3) below.

(1) Main apar gea (w)aan
I reach go-perf.m.s am
(I have reached.)

(2) Tota ud gea e.
parrot fly go-perf.m.s is
(The parrot has flown away.)

(Shah, 2015, p. 111)

(3) Toshii-ne kamm kar suttiaa.
Toshii-erg work.m.s do throw-pst.m.s.
(Toshii got the work over with.) (Bhatia, 1993, p. 327)

In structures (1) to (3) *apar (reach), ud (fly),* and *kar (do)* are main verbs while *gea (go), gea (go), suttia (throw)* are light verbs respectively. It is evident that the main verbs carry the lexical meaning and occur in the verbal stem form while the light verbs bear the *–aa* suffix (i.e. the morphological marking) to represent the perfective aspect and the past tense (In the subsequent data, it may, however, be noted that in the absence of an overt light verb the aspectual marking is shifted to the main verb). The following verbs are frequently used as light verbs in Punjabi: *aauna* (to come), *jaauna* (to go), *lainaa* (to take), *deunaa* (to give), *suttna* (to throw), *chaddna* (to leave), and *baithna* (to sit).

With respect to tense, Punjabi verbs express three distinct types: present, past and future. The aspect may broadly be divided into two types perfective and non-perfective (The non-perfective aspect may further be divided into habitual and progressive). In the following discussion Punjabi verbal morphology is discussed in relation to both tense and aspect simultaneously. The verb forms are first discussed in present, past and future non-perfective (habitual and progressive) sentences and then in perfective sentences. The latter is more crucial as it may allow ergative marking on the third person subjects.

In simple (habitual) present tense, the imperfective marker suffix *–daa* is added to the stem of the verb to form present participial form of the verb. The suffix is inflected for number and gender as manifested in these forms: masculine singular *–daa,* masculine plural *–de,* feminine singular *-di,* faminine plural *-diaan.* A slight difference in the suffixation patterns for the tense has been observed in Shah (2015) and Bhatia (1993). According to the structures provided by Shah (2015, p. 109), the first and second person singular may get suffix *–na* (as in *janna (go)*) and the first person plural may get *–ne* suffix (as in *janne* (go)). However, as evident in structures (4) and (5) below, this difference in the suffixation pattern does not affect syntax.

In present habitual (simple), the present participial form of the verb is followed by present form of auxiliary verb which is homophonous with copular verb form. The

auxiliary form may vary with respect to number and person according to the following pattern: first person singular *aan* (am), first person plural *aan* (are), second person singular *ai(n)* (are), second person plural *o* (are), third person singular *e*/*ai* (is), third person plural *ne* (are) (Shah mentions the possibility of *w* sound before the first person singular form of auxiliary as in *(w)aan*). The structures in (4) to (6) below illustrate verb and auxiliary form patterns in present simple tense.

(4)

a. Maen kar naa(daa) (w)aan.
I do-prst/imperf.m.s am.1st.s
(I do.) (Shah, 2015, p. 109)

b. Main aandaa aan.
I-nom come-prst/imperf.m.s am
(I come.) (Bhatia, 1993, p. 243)

(5)

a. Tusi jande o.
you.m.pl go-prst/imperf.m.pl are
(You go.)

b. Toon jaana(daa) ai(n)
you-m.s go-prst/imperf.m.pl is
(You go.) (Shah, 2015, p. 109)

(6)

a. Kuriaan pardiaan ne.
girl-f.pl read-prst/imperf.f.pl are
(The girls read.) (Bhatia, 1993, p. 243)

b. Oh boldi jandi e (ai).
she-f.s speak-prst/imperf.f.s go-prst/imperf.f.s is
(She keeps on talking.) (Shah, 2015, p. 109)

The past habitual tense marks no difference in the verb form from present habitual. The difference in present and past tenses are obtained by using past auxiliary *siis/saan* instead of present. This can be seen in (7) and (8) below.

(7) O sakuul jandaa sii.
he-nom school go-imperf.m.s was
(He used to go to school.)

(Bhatia, 1993, p. 254)

(8) Mean Ohnoo roz milda sii/saan.
I him daily meet-imperf.m.s was
(I used to meet him daily.) (Shan, 2015, p. 112)

The future simple tense does not require any copular verb. The suffixes presented in Table 3 (i.e., inflected for person, number and gender) are added to the stem of verb to form the future simple tense.

Table 3

Suffixes used in future simple tense of Punjabi

	Masculine	**Feminine**	**Masculine**	**Feminine**
Ist person	*-aangaa/-ungaa*	*-aangi/-ungii*	*-aanga*	*-aangiann*
2nd Person	-egaa	*-egii*	*-oge*	*-ogiaan*
3rd Person	*-egaa/ugga*	*-eggi/-uugii*	*-anga*	*-angiaan*

(Bhatia, 1993, p. 248)

(9) Maen swere ghar hovaan -gaa.
I morning home be-fut.m.s will-m.s
(I will be at home in the morning.) (Shan, 2015, p. 117)

(10) Maen likkhaan -gaa.
I write-fut.m.s will-m.s
(I will write.) (Shan, 2015, p. 116)

Before moving on to progressive aspect, it is significant to highlight that there is no evidence of ergative marking on subject in habitual sentences in whatever tense (present, past, or future) they may occur.

The present and past sentences in progressive aspect are expressed by means of progressive marker *rai* which is inflected for gender and number. The marker is followed by the auxiliary that is homophonous with copular verb. The progressive marker is derived from the verb *raenaa (to live).* As it occupies similar place and function of a light verb in a sentence, Bhatia (1993) considers it equivalent to a light verb. Along with the progressive marker from the root *raenaa,* Shah (2015) also mentions the possibility of the progressive marker *pea* (from the root *to lie*). However, both types of progressive markers bear the same morphological/syntactic function as no evidence of ergative is found in progressive sentences. Furthermore, it is important to note that, there is no difference in the present and past progressive verb forms. The difference is obtained only by the use of auxiliary. Like habitual sentences, there is no evidence of ergative case on the subject of present and past progressive sentences. The structure (11) to (13) can illustrate the progressive (i.e., present and past) sentences.

(11) Assi sakool jaa rae aan.
We school go prog.m.pl am
(We are going to school.) (Shah, 2015, p. 110)

(12) Main so riaa saan.
I sleep prog.m.s was
(I was sleeping.)
(Bhatia, 1993, p. 254)

(13) Oh khanda pea si.
he eat-m.s lie-prog.m.s was
(He was eating.)
(Shah, 2015, p. 114)

Perfective aspect is more crucial than non-perfective aspect (habitual and progressive) because of allowing ergative *–ne* case marking on third person subjects of

both transitive and intransitive sentences. The following discussion delineates the verb forms that describe perfective aspect.

The verb in past simple tense expresses perfective aspect in the form of past participle which is obtained by adding perfective suffixes to the verbal stem. These suffixes are inflected for number and gender as evident in these forms: *-iaa* masculine singular, *-e* masculine plural, *-ii* feminine singular, and *-iaan* feminine plural (presented in table 4 below). These suffixation patterns may be observed in structures (14) to (18).

Table 4

Perfective aspect suffixes in Punjabi

	Masculine	**Feminine**
Singular	*-(e)iaa*	*-ii*
Plural	-(a)*e*	*-iaan*

(14) Main skool ge(i)aa.
I school.m.s go-pst.m.s.
(I went to school.)

(15) Toon parh(y)iaa.
you.2nd.s read-pst.m.s.
You read. (Shah, 2015, p. 113)

(16) Onaan-ne nicchiaa
they-erg sneez-pst.m.s
(They sneezed.) Bhatia (1993, p. 169)

(17) Tussi kam kiitaa.
you-m.pl work.m.s. do-pst.m.s.
(You did the work.)

(18) O(h)naan-ne sweter unya.
they-erg sweater knit-pst.m.s.
(They knitted the sweater.) (Shah, 2015, p. 113)

The structures (14) and (15) are intransitive where verb forms *giaa* and *giaan* agree with the subjects *Main (I)* and *Assi (We)* respectively, but in the intransitive structure (16), where the subject is marked with ergative *–ne*, the V *nichnaa* assumes a default singular agreement because there is no object present in the structure. In transitive structure (17), the verb form *kiitaa* agrees with direct object *kam*. It is important to note that in structures (14), (15), and (17), the subjects are in nominative case like the subjects of the subjects expressing habitual and progressive tenses, but the structures (16) and (18) allow–*ne* marking on the third person plural subject *Onaan* (they). Structures (14) to (18) demonstrate that in Punjabi verb agrees with subject in case of an unmarked subject but in case of a marked subject the verb agrees with the object. However, an interesting problem may be posed by (17) where even the unmarked subject blocks verb agreement with the subject and the verb-object agreement is obtained. This phenomenon is discussed in detail in chapter 4 of this study.

The present and past perfect tenses are obtained by adding perfective aspect suffixes (mentioned in table 4) to the verbal stem. They are only differentiated by use of present and past auxiliary. This can be observed in structures (19) and (20) below.

(19)

a. Vautii sinme gaii ai/e.
   wife.f.s cinema go-perf.f.s is
   (The wife has gone to cinema.)

b. Vautii sinme gaii sii.
   wife.f.s cinema go-perf.f.s was
   (The wife has gone to cinema.) (Bhatia, 1993, p. 250)

(20)

a. Assi Multan gae aan.
   We Multan go-perf.m.p was
   (We had gone to Multan.)

b. Assi Multan gae saan/sii.
   We Multan go-perf.m.p was
   (We had gone to Multan.) (Bhatia, 1993, p. 250)

In (19) and (20), the difference between (a) and (b) structures are obtained only by present and past auxiliary forms which are homophonous to the copular auxiliary forms in the respective tenses. The verb forms *gaii* and *gae* is obtained by adding similar suffix *–ii* and *-e* to the verbal roots in (19) and (20) respectively. Perfective aspect is also possible in future tense as shown in (21) and (22) in which the verb form bearing is similar to perfective present and past tenses; however, the future tense is obtained by future auxiliary hovegga that is formed by adding future suffix to the verb *ho (be).*

(21)

Gaddi	aan	tikkan	puls-ne	cor-nuu	phariaa
train.f.s	arrival	till	police-erg	thief-acc	catch-perf.m.s
hovegaa					
be-fut.3.m.s					

(The police will have caught the thief by the time train arrives.)

(Bhatia, 1993, p. 250)

(22)

a.

Oh	saun	gea(iaa)	howega(a)
he-nom	sleep	go-perf.m.s	be-fut.3.m.s

(He will have slept.)

b.

Oh-ne	kha	lea(iaa)	howega(a)
he-erg	eat	take-perf.m.s	be-fut.3.m.s

(He will have written the letter.)

(Shah, 2015, pp. 120-121)

In (22), the light verbs *gea* (from the root go) and *lea* (from the root take) bear the marking for perfective aspect. There is widespread evidence in Punjabi language to confirm that light verb bears the marking for aspect provided that it is overtly present in a sentence.

After introducing some basic facts about Punjabi, the following discussion delineates some facts about English language briefly.

English is a Western Germanic language of the Indo-European family. It's closely related languages are German, Frisian and Dutch. It originated in England, but currently

it is a dominant language of United Kingdom, United States, Australia, Canada, New Zealand, Ireland, various Island nations of Pacific Ocean and Caribbean Sea. It is the official language of India, Singapore, Philippines, South Africa, and many parts of Sub-Saharan Africa. Many counties of the world adopt it as a first choice of foreign language which gives it the status of *lingua franca*. Modern English is Analytic (relatively uninflected) whereas its ancestral tongue Proto-Indo-European was synthetic (inflected). During the course of a history of thousand years, English inflected variable forms have been transformed into invariable uninflected forms. This property makes English different from languages like Sanskrit, Greek, Russian, Latin and German. English is different from other European languages in taking the minimum inflected forms. For instance, if English verb *ride* is compared to the corresponding terms in German, the English term has 5 inflected forms while German *reiten* has 13 infected forms. In English only five word categories get inflections: nouns, pronouns (as in he, his, him etc.), adjectives (as in big, bigger, biggest), adverb, and verb (i.e., for tense and aspect). Over the last five centuries, the loss of inflections has grown flexibility of functions. Once different forms were obligatory to differentiate between word classes as nouns or verbs; however, in modern English the flexibility of function has made the expressions as *planning a table* or *tabling a plan, booking a place* or *placing a book* possible (Crystal & Potter, 2021).

Radford (2004, pp. 12-15) delineates some parametric properties of English language which are relevant for its comparison with other languages in a UG context. First, English is non-null subject language. There are many languages which allow their subjects to drop, for instance, Italian where the expression *parla francese* (speaks French) is grammatical if used instead of (*Maria parla francese* (Maria speaks French), but in English **Speak French* is ungrammatical. Secondly, English allows the first wh-expression to move to the front of the clause in interrogative clauses as evident in *What do you think he will say?* where wh-expression *what* has moved to the front of the clause which is comparable to *Chinese Ni xiangxin ta hui shuo shenme?* (You think who will say what?) where the wh-expression has remained *in- situ*. Thirdly, In English all heads: verbs, nouns, prepositions, etc. precede their complements (e.g., *close the door* which

contrasts with Korean where complement precedes the head as in *Muneul dadara* (Door close)).

In the parametric properties delineated by Radford, the comparison of English and Punjabi shows that the former is head-first language and the latter is head-last language (Shah, 2015) (e.g., as in *on the table* and *maiz uttey*). English is a wh-movement language while in Punjabi the wh-expressions exhibit a complex phenomenon which needs an extensive study. For most of the languages like Japanese and Chinese, the wh-phenomenon is easy to decide in favor of *in- situ* facts, but for Punjabi, like its other Indo-Aryan neighbors, the wh-expressions may move or remain *in-situ* which renders it problematic to decide in favor of one parametric option. For the third property, unlike English, Punjabi is a null subject language (Bhatia, 1993) where pragmatically recoverable subjects can be dropped without any effect on grammaticality of the sentence.

1.2 Statement of the Problem

In the current framework of UG, the valuation of un-interpretable features (i.e., ϕ-features of the functional categories T and *v** and structural case features of the argument NPs) is an important task for achieving the Strong Minimalist Thesis. The computational procedure (C_{HL}) of language achieves it by the Agree operation induced between a T or *v** probe and an NP goal. In the usual nominative-accusative languages like English, it is easy to assume that a T probe enters into Agree operation with the subject NP and the *v** probe enters into a similar operation with the direct object NP. However, there are certain languages where the subject may be marked by a post position- the morphological realization of the ergative case. Punjabi is one such language where the third person subjects of perfective clauses are usually marked ergative case. A problem arises when in the similar grammatical context ergative is lost and subjects receive nominative case. This split in behavior has posed problems for researchers in characterizing the true status of ergative case. The major problems are to characterize the source of ergative case, to differentiate in the mechanism of obtaining ergative and nominative case alignments, and to identify the status and source of the case on DO in ergative subject derivations. Apart from these, a very significant problem, which has not been taken into consideration in the

literature on ergativity, is the identification of feature valuation mechanism of *v** when the subject receives ergative case. The existing accounts on the comparison between nominative and ergative case patterns leave some conceptual gaps. For instance, the researchers who assume that ergative is a structural case assigned by higher CP/TP domain oversimplify a complex phenomenon that ergative case is assigned amidst a cluster of complex factors; On the other hand, the researchers who find that ergative is an inherent case assigned by *v** leave many conceptual issues unattended (e.g., the feature valuation of *v**). The reason of comparative study of Punjabi, a split ergative language, and English, a usual nominative language lies in the need for obtaining solutions to the problems posed by the quirkiness of ergative case particularly with reference to its difference from nominative case.

In addition, this study also identifies problems in the existing proposals on the dissociation of adjuncts from their initial Merge position. It might be due to the asymmetry of adjuncts observed uniformly across languages; the free adjunction of elements results in a flexible word order: a big problem for computational procedure C_{HL} of language to accommodate. Adjunction is a problematic phenomenon for usual nominative languages like English, but for languages like Punjabi, which allow free word order like its other South Asian counterparts (e.g., Urdu/Hindi), this phenomenon is even more tricky. The acyclic approach of adjunction as adopted by a wide range of scholars does not satisfy SMT. The proposals for countering the acyclicity argument are either redundant or conceptually problematic. In this regard, the comparison of a free word order language Punjabi and a relatively strict word order language English may be helpful in resolving the flexible positioning of adjuncts in a structure: an ever-problematic issue for syntax.

Last but not least, wh-movement has also posed problems for researchers. It has been a problem to decide what factors motivate wh-expressions to move if they move at all; furthermore, whether wh-elements actually remain *in-situ* in the languages which apparently do not allow wh-movement or they move to Spec-*v** position in such languages. The first problem is more related to languages like English which allow wh-expressions to move from their original Merge position; however, the second problem is

more related to languages like Punjabi in which wh-elements remain *in-situ* in most of the cases. The latter type of languages pose more problems by mystifying the fact that whether the surface movement of wh-elements is the usual free word movement or it is triggered by some features particularly related to wh-elements. The existing literature is divided by providing two distinct accounts: first is that such languages are not *wh-in-situ*, but wh-elements in them are raised to Spec-C or Spec-*v** position; the second account proposes that wh-elements remain *in-situ*. For resolving both types of problems a comparative analysis of English, a wh-movement language, and Punjabi, a wh-*in-situ* language, may render beneficial results.

1.3 Objectives of the Study

The objectives of the study are following:

a. To compare the derivation of Complimentizer Phrase projections CPs in the two languages Punjabi and English.
b. To identify the source of ergative case in The Punjabi language and to compare it to the source of nominative case of both Punjabi and English.
c. To characterize the parametric variation in the features of the core functional categories CFC's (i.e., C, T and *v*/v*) of the two languages.
d. To characterize the procedure of obtaining CP derivations involving T_{def} elements (i.e., raising/ECM/passive participial) constructions of the two languages.
e. To stipulate a satisfactory mechanism for dissociation of Adjuncts from their initial Merge position and some related facts (e.g., free scrambling of constituents) in the two languages, and to explore some mechanism for accommodating these facts in the computational procedure C_{HL} of language.
f. To explore the phenomenon of free word order in Punjabi and its comparison with strict word order in English.
g. To compare derivations involving wh/k-expressions in the two languages for exploring some unresolved facts about both cases of wh-dependencies (i.e., wh-movement and wh-*in-situ*).

1.4 Research Questions

This study aims to address the following research questions.

a. How does the computational procedure of language C_{HL} derive the Complementiser Phrase (CP) projections in the two languages Punjabi and English by the primary operation Merge and the feature valuation mechanism Agree?
b. What is the source of ergative case in Punjabi?
c. How are the ergative and the nominative case alignment patterns obtained in the two languages?
d. What is the parametric difference in the features of the Core Functional Categories (CFCs) C, T, and *v/v** of the two languages?
e. How are the T_{def} derivations in the two languages obtained by Multiple Agree operation?
f. How can the dissociation of adjuncts from their original Merge position be accommodated in the C_{HL} of language?
g. Why do k-expressions in Punjabi move more freely than the wh-expressions of English?

1.5 Research Methodology

This is an exploratory study which utilizes qualitative method of analysis to compare the valuation mechanism of un-interpretable features of the lexical categories that are involved in obtaining syntactic derivations in English and Punjabi. The study borrows methodological framework from Chomsky's (2008) work *On Phases* (*OPh)* which builds on some of his recent works (Chomsky, 2000, 2001, 2001b, 2004). Chomsky (2008) adopts P&P approach and bases his study on *Strong Minimalist Thesis*: language is an optimal solution to the interface conditions. The scope of P&P approach is reduced to assembly of features in lexical items (LI's) which must have some features: Edge features (EF) to enter into a computation. "A natural interpretation of the notion *edge* can capture some of the properties of *tucking in* in the sense of Richards (2001),

taking the *edge* to be the position as close as possible to the probe" (Chomsky, 2008, p. 7). A LI deprived of EF would be considered as a complete expression (e.g., an interjection). EF, thus, makes LIs eligible for Merge which iterates unboundedly and ensures, as a result, that language is a recursive infinite system of a particular kind.

OPh provides a simplified mechanism of syntactic derivations where all the three cycles related to phonology, semantics and narrow syntax proceed as a unit and at the stage the derivation reaches a certain level called *phase* it is transferred to the interfaces. In the current framework, Chomsky retains the assumption of Chomsky (2004) that C and *v** are the phases while T is not. T derives its properties from C. The derivation observes Phase Impenetrability Condition (PIC) which holds that at a higher phase level the penetration into lower phase is impossible except to the edges.

In the framework of *Oph*, language is assumed to be a system of discrete infinity which consists of hierarchically organized objects formed by iterated operation Merge. According to linearization requirement at SM system and argument-predicate requirement at C-I system, the Merge should always be binary in line with Kayne (1981). The Merge takes two syntactic objects (SOs) X and Y (already formed) and constructs new syntactic object from them. A natural property of Merge is *No Tampering Condition* (NTC): The Merge of two SOs X and Y yield them unaffected (i.e., neither they are broken, nor is some feature added to them). They retain their basic properties; therefore, Merge is always applied to the edge. This property of Merge further leads to *Inclusiveness condition* which entails that no descriptive technology: bar levels, indices, traces etc. should be added in the course of derivation. The usage of such technology may only be for expository purpose with no role in the derivation.

Merge has two types: External Merge (EM) and Internal Merge (IM). If Y is merged to X in a way that Y is a part of X, it yields IM; if Y is not a part of X, it yields EM. These two types of Merge are related to semantic duality at the C-I interface. EM yields argument structure while IM satisfies discourse related properties (i.e., scopal effects etc.). The current framework assumes that IM (= Move or displacement property of language) is induced for satisfaction of EPP or EF of some functional head.

The computational system of language is supposed to incorporate two initial operations Merge (Internal and External) and Agree among other operations (i.e., the deletion of copies left behind by Internal Merge, the transfer of features from C to T, and some mechanism for imposing linear order which comes later). The un-interpretable features of phase heads C and *v** play a crucial role in this regard. These features include ϕ-features, Edge features (EF) and EPP features of the functional heads C, T, and *v**. The Agree operation is induced when a head with un-interpretable/unvalued ϕ-features become probe and searches for some goal NP/DP with unvalued structural case features. The Agree operation values the unvalued/un-interpretable features of both probe and goal. The movement/raising is not obligatory for Agree. The composite operation (IM) is induced when EF or EPP features of a certain head need to be satisfied.

The framework just delineated is applied on the data collected from authentic sources of grammar of both languages. Punjabi data is collected from Shah (2015), Bhatia (1993), and Bhardawaj (2000) while English data is collected from Collins and Hollo (2000), Walter and Swan (2003), and Radford (2004). The data consists of sentence equivalent CPs (i.e., complete clausal units) defined by having at least the phase head C which selects a finite T. The ungrammatical CPs are also collected as part of data to compare them with grammatical derivations, so that the reason of non convergence of the former may be explored. After collection of data, it is schematically described in the form of set configurations: CP [TP [v/*v**P [VP]]]. The study has been divided into five distinct sections which explore different phenomena about the derivational/computational procedure of obtaining CPs in the two languages.

1.6 Significance of the Study

Significance of this study is multifaceted. First of all, it attempts to provide some solution to the problems, highlighted in the existing accounts, with respect to comparison between nominative and ergative case alignment patterns. For this purpose, a nominative language English and a split-ergative language Punjabi has been selected from same family origin-Indo-European; however, they may be further divided into sub types as West Germanic and Indo-Aryan respectively. The comparative study has proven significant in identifying both similarities and differences in the Core Functional

Categories of the languages (e.g., the properties of *v* and *v**). Secondly, the comparison has rendered beneficial clues for resolving many complicated issues in both languages as the evidence from one language has helped in reaching a satisfactory solution to the problematic issues in the other language (e.g., the problematic status of English *by-phrases* in passives has been resolved with the help some evidence found in their Punjabi counterparts). Thirdly, this study highlights some problems in the current conceptualization of *adjunction*, as a general phenomenon, which has been equally problematic for all languages, particuelarly with respect to the dissociation of adjuncts from their initial Merge position in a derivation. In this regard, the empirical evidence gathered from both English, a language with relatively strict word order, and Punjabi, a language with a very flexible word order, has rendered a new insight into the matter of *adjunction* and helped in stipulation of a satisfactory mechanism that may also be helpful in resolving problems in some other related phenomena (e.g., scrambling of constituents and free word order). Fourthly, this study provides a new insight into wh-movement both as a general phenomenon and as a particular aspect of languages like Punjabi where free movement of wh-elements is problematic in deciding whether such languages exhibit *wh-movement* or *wh-in-situ* facts. Last but not least, this study very significantly introduces the mechanism of *Internal Pair Merge* that may be a very useful addition to the existing minimalist apparatus, and which may characterize the C-I interface requirements in a broader way to identify the discourse/pragmatic related properties of language.

1.7 Organization of the Study

This study is divided into five chapters: Chapter 1, Introduction; Chapter 2, Literature Review; Chapter 3, Research Methodology; Chapter 4, Analysis and Discussion; and Chapter 5, Findings and Conclusion. A brief utilization of chapters is following:

Chapter 1 introduces the background of the study, Statement of the Problem, Research objectives, Research Questions, a brief description of the Research Methodology, Significance of the study, and Organization of the study.

Chapter 2 critically reviews the previous works on UG. The chapter begins with tracing the concept of Universal Grammar in ancient times then it comes to examine the

influence of 17th century philosophers on the current Chomskyan paradigm. After that the different stages of the seven decades long development of Universal Grammar are analyzed. Different approaches adopted during different stages of the development of UG (i.e., the initial 1950s model, the Aspects model of 1965, introduction of X-bar theory, and P&P under GB theory) are evaluated in detail. A special care has been adopted in evaluating the contribution of Minimalist Program in the development of UG. As Punjabi is one of the two major concerns of this study, the studies on the ergativity, free word order, and *wh-movement and wh-in-situ* facts (as explored in studies of different South Asian languages) are critically reviewed at the end of chapter 2.

Chapter 3 deals with the issues related to Research Methodology: theoretical framework, research design, research sample, research procedure, and data analysis procedure.

Chapter 4, Data Analysis, presents analysis of the data in five separate sections analyzing the different types of derivations: 4.1, the v_{def} derivations; 4.2, *v** derivations; 4.3, T_{def} derivations; 4.4, Adjunction; and 4.5 wh/k-derivations. At the end of every section the renderings of this study are discussed in comparison to the previous studies.

Chapter 5, Findings, Discussion and Conclusion, concludes the study by answering all the research questions of the study in separate sections in light of the findings rendered by the data analysis in chapter 4. At the end of chapter 5, contribution of this study and suggestions for future research are mentioned.

CHAPTER 2
LITERATURE REVIEW

2.1 The Beginning of Grammar as a Scientific Domain of Inquiry

The study of grammar, as a separate domain of scientific inquiry, began in India before it got the same status in West. At the time Plato was meditating whether names were natural or conventional devices, and Aristotle was identifying the role of parts of speech in making propositions; their works, however, rooted in their broader enterprises of metaphysics and logic, Pāṇini, the famous Sanskrit linguist and grammarian of 5th century B.C, had described Sanskrit, the ancient Indo-European language, in modern linguistic sense of grammatical description. His grammar, consisting of 4000 interactive rules (*sutras*), provided a descriptive account of Sanskrit that would teach the comparative-historical linguists of 19th century and structuralists of 20th century how to conduct a comparative or descriptive analysis of their own languages (Hinzen & Sheehan, 2013, p. 16). Bloomfield (1933), acknowledging the influence of Pāṇini on modern linguistics, observed that "No other language, to this day, has been so perfectly described", in a way that is "complete and accurate", and based "not upon theory but upon observation" (Bloomfield, 1993). The works and developments in grammar from 19th century onwards owe a great deal to Pāṇini-who laid foundation of grammar as a distinct science of inquiry.

The influence of the Indian grammarian was not limited to the linguistic traditions of early 20th century; rather the later generativist tradition could also find their traces in the 2500-year-old Indian tradition.

> The *Ashtadhyayi* is generative as well as descriptive. With its complex use of meta-rules, transformations, and recursions, the grammar in '*Ashtadhyayi'* has been likened to a turning machine, an idealized mathematical model that reduces the logical structure of any computing device to its essentials. (Editors, Encyclopedia Britannica, 2015).

Cardona (2009) observed that instead of describing a limited corpus of Vedic text, Pāṇini's grammar described Sanskrit, a language having a complex structure, in terms of formal rules which could be applied on a list of primitive roots to accommodate an infinite number of cases, thereby capturing the unbounded nature of language. Although this could not be completely identified with modern generative tradition of Chomsky (1955, and subsequent works), yet it had a concept of transformation and recursion which was at the core of modern transformational generative grammar. Hence, modern generative Grammar enterprise might trace some roots in ancient Indian tradition, even though there was a difference in the epistemological and philosophical interpretation of the role of grammar in both the approaches.

The early scientific investigation of grammar in India was in fact rooted in recognizing its epistemological significance a bit early. In this tradition grammar was meaning based. Panini's grammar was formal, but grammatical description started from meaning to be signified, and this was the condition for adding affixes on bases which established an intimate link between semantics and grammar. This grammar was widely recognized by all Vedic schools as a common analysis of Vedic Texts, and was not confined to particular ones like Patanjali (2nd century AD) and Bhartrihari (5th century) (Cardona, 2009). In the words of Bhartrihari: "Words are the sole guide to the truths about the behavior of objects; and there is no understanding of the truth about words without grammar" (Vakyapadiya I.13, as cited in Hinzen & Sheehan, 2013, p. 19). This quote revealed the stance of ancient Indian tradition about epistemological position of grammar; that was, Language was at the heart of Universe and grammar was at the heart of language. So, there could be no understanding of the world or Ultimate Reality without grammar. According to the position contended by Bhartirihari, Manu-samarti, and other darma texts the Ultimate Reality itself, or Brahman, is of the nature of word (*sabdabrahman*, where *sabda* means word) (Aklujkar, 2009). This metaphysical,

spiritual, and philosophical importance of grammar led the ancient Indian masters of grammar to lay the foundation of the discipline as an organizing principle behind reality, thought, nature and the world.

Bartitriahri viewed meaning in a triangulation (Davidson, 1984), where language was not understood as an independent system of formal rules, but as a unification of three distinct elements: thought, language, and the object meant (Patnaik, 2009, p. 200). This view was *substantivist* which also 'anticipated many aspects of modern *nativism*'. To further elaborate, according to this view: a child could not acquire language unless it possessed some innate ability (Hinzen & Sheehan, 2013 p. 22). This theory of language acquisition justified Chomsky's *mentalism* which rejects the *behaviorism* of Bloomfield (1933) and Skinner (1957). The idea of unification of language, thought, and reality was not endorsed by modern linguistic theory where grammar just linked with semantics through a computational system. However, it would not be untrue that the concept of Universal Grammar (UG) started with the very inception of the scientific study of grammar. The first notion of grammar which dawned upon Indian mind had element of UG, although different from its modern paradigm.

Western world of scientific inquiry never gave that normative significance to grammar which was laid to it by their Indian counterparts. In view of most of the interpreters, Aristotle was more a logician than a grammarian. However, Alexandrian grammarians were the first to introduce the subject in West. Dionysus Thrax of Alexandria wrote the milestone work *The Art of Grammar* wherein he analyzed letters, syllables in literary texts, and introduced eight parts of speech. The attention of these grammarians was limited to literary texts, and their aim was to protect their language from decay. The Romans strictly followed Greek system to protect their language from decay and focused on literary texts in their studies. The Greeks set Homer as standard while the Romans set Cicero and Virgil as model for Latin. In Latin, Varro of 1st century B.C was the only grammarian who believed that task of grammar was to discover structures not to dictate. Donatus (4th Century AD) and Priscian (6th century AD) were the most important Latin grammarians whose works influenced the teaching of Latin grammar in European Middle Ages. Aelfric, the abbot of Eynsham (11th century), wrote

the first Latin grammar which, according to him, could set the standard for English grammar. The idea of UG in Europe came with *Modistae*, the grammarians of 13th and 14th century who viewed language as reflection of reality when they peeped into philosophy for grammatical explanation. After them a significant effort to explore common elements of thought in all languages was made by *Port-Royal* grammarians of 17th century in France. Chomsky acknowledged them as first transformational grammarians by virtue of their interest in UG (Editors Encyclopedia Britannica, 2019).

Priscian work on parts of speech (*partes orationis*), which he numbered as eight, became the point of departure for Modistic Universal Grammarians. These parts had a very lesser role in logic as Aristotle in his *De Interpretatione* introduced only two parts – noun and verb-playing the role of subject and predicate which were in turn two essential elements of a proposition, these also included a connecting element which in terms of Aristotle was grammatical tense (Hinzen & Sheehan, 2013). According to Covington (2009), until the time of Priscian the connection between logic and grammar had been lost. This connection was started to be rediscovered by the writers of eleventh century like Anselm of Canterbury (1033–1109) and Peter Abelard (1079–1142), and William of Conches (1125) and his pupil Petrus Helias. In fact Conches was critical of the Priscian's definitions of the parts of speech and his pupil found a need for their functional definition. Any way they set a starting point for Modistae to develop the parts of speech further.

At the heart of the struggle of achieving a paradigm of UG by Modistic grammarians was the study of *modi significandi* (mode of signifying)-the properties words were supposed to have, as parts of speech, more than their pronunciation and non-grammatical meaning. Grammar was defined as the study of these *modi* which could combine in grammar in a specific way. For instance, the combination of two items-Socrates and Philosopher might not only yield a combination specific to semantics, but may provide an object where the relationship between the two was due to grammar. The grammaticality and ungrammaticality did not depend upon compatibility of meanings of the words, but upon compatibility of modes of signifying. For instance, both *black cape* and *categorical cape* was grammatically compatible, but the latter was only semantically

deviant. So, compatibility of meanings of the words was not the matter of a grammarian (Covington, 2009). The independence of grammaticality from semantic component was what continued in the modern UG paradigm, but the Modistic tradition could not live long as soon as it was discovered that words did not carry any sort of *Modi Significandi* (i.e.,modes of signifying). So, the attempt of Modistics to find linguistic universals in parts of speech by focusing on their power of signification was rejected by subsequent grammarians who had no room to base their theory on parts of speech which had been a tradition since antiquity.

The *Port Royal* tradition of 17th century was significant in its rationalist Cartesian interpretation of the relationship between language and logic which was revived in 20th century linguistics. According to Buroker (2014) *La Logique ou l'art de penser*, *The Port-Royal Logic*, was the most influential logic text from Aristotle to the end of the nineteenth century. The authors were Antoine Arnauld and Pierre Nicole, philosophers and theologians associated with the Port-Royal Abbey in France. The first edition appeared in 1662. There work is a companion to *General and Rational Grammar: The Port-Royal Grammar*, written primarily by Arnauld and edited by Claude Lancelot, which appeared in 1660. The companionship of these works maintains the relationship of logic and language. The works of these Port Royal tradition endorsed Cartesian (mind-body) dualism. The influence of Descartes was evident in their view that thought was prior to language. Words are conventional, arbitrary, and external signs which mirror an independent already existing mental state. Language could signify thought as linguistic structure mirrors the structure of thought. In order to search for a correspondence between logic and grammar, the grammarians sought for universal principles underlying all languages of the world based on the idea that all human beings possessed the same capacity for thought and speech. Although Port Royal grammar was rejected by comparative historical linguists, the works on linguistic universals in early 1960's revived it in many aspects.

2.2 The Beginning of Universal Grammar in 20th Century

It is beyond doubt that the recent enterprise of a UG (from 1950's onwards) is derived from Chomsky who has attempted to develop a natural science of language in

current times. However, he is not the first to originate the method of a natural science. Hence, the discussion could not proceed without a mention of Descartes' influence. Descartes had no direct role in developing a natural science of languages, but his groundbreaking development of methods of natural science with Galileo, and his observation regarding creativity and innateness of language were at the core of modern UG paradigm. His observations about creativity of language, which appeared in Part V of 1637 *Discourse* that were further expanded by Cordemoy (1666) amounted to the following three: First, language use appeared to be free of external or internal stimuli. Any internal thought or external stimulus may incite or incline a speaker to speak, but in no way it might be a cause of the language production. A person could speak and think independently of any stimuli. This observation might be considered as a foundation of rejection of behaviorist interpretation of language production. Secondly, language use might occur in unbounded number of sentences. This was in line with *generativist* concept: infinite use of finite means. Thirdly, as it was not caused by any stimuli and might take innumerable forms, what a speaker said in a given circumstances was reasonable and appropriate. The observations about poverty of stimulus were also mentioned by Plato, but Descartes was the first to discuss the constraints imposed by these observations on the study of mind. In fact, he had an innate and *internalist* approach for development of a concept in mind. This approach did not discard possibility of an external system to just trigger or incite the development of a concept; however, an internal system would be responsible for complete development and fixing of nature of a particular concept (Mcgilvray, 2017, pp. 100-101).

The foundational contribution of Descartes led Chomsky to title one of his seminal works as *Cartesian Linguistics* (CL) (Chomsky, 2009) where he discussed the studies of the scholars of *rationalist group* because of their basic assumption that components of mind could be best studied as natural objects and their natures were determined by the internal systems of mind. This *internalism* and *nativism* has been at the core of Chomsky's paradigm of UG since its inception to date. This could be compared with the empiricists approach, based on externalism and non-nativism, which assumed that language (and other parts of mind) was produced by external influence. For instance, *behaviorism* adopted an external approach to production of languages where external

stimulus is at the core of production of language. These roots in two distinct paradigms of philosophy, i.e., internalist nativism and externalist empiricism, divided the study of languages in two distinct camps which in Chomsky's (1995b) terminology might be termed as I-language and E-language. The former adopted nativist, internaist, and rationalist stance while the latter adopted empiricist, externalist, and non-nativist stance.

Mcgilvray (2017) observed that "Natural sciences typically deal with phenomena out of reach of direct observation and—more generally—of our everyday (commonsense) conceptions of things and events" (Mcgilvray, 2017, p. 92). So, natural sciences can be defined as 'postulated formal theories of hidden phenomena'. He further expanded on (Chomsky, 1965) to delineate the conditions which a science must meet to succeed. "These are descriptive adequacy, explanatory adequacy, explicit formal statement, simplicity, accommodation to other sciences, objectivity, universality and especially making progress in improving a science along one or more and ideally all of the preceding dimensions" (Mcgilvray, 2017, p. 92). Mcgilvray linked these desiderata of natural science conditions to the conditions/constraints imposed on natural science methods by Galileo, Goodman, and Descartes (particularly the four rules stipulated by Descartes for study of natural sciences). This link might appear direct in some conditions and indirect in others, and questionable in the sense that the 16th century scholars ever meant the same conditions. However, relevant here was that these conditions remained spotlight of research for Chomsky and other researchers of UG to develop and modify the UG theory at every new stage nearer to a natural science of language. With respect to a formal theory of UG, descriptive adequacy meant that it should adequately describe what innate component i.e., faculty of mind enables a human to develop language. In a similar way an explanatorily adequate UG must be able to explain what enables a child to acquire language at an early age in the presence of a poor stimulus/input. In the early stages of the development of UG theory Chomsky (until 1990s) was more concerned about explanatory adequacy. In post 2000 works Chomsky has stressed to go beyond explanatory adequacy to adjust UG more according to principles of nature that underlie all human sciences (Chomsky, 2004, 2005). Explicit formal statement has been a hallmark of Chomsky's model since early generativist models (1957, 1965); however,

universality, in true sense, began to appear after X-bar theory (during 1970's) and Principles and Parameters model (during 1980's) after language specific and construction specific rules yielded in favor of universal principles common to all languages. In light of the review of Cartesian influence on Chomsky's endeavor to formulate a theory of UG, the following definition comprehensively defines UG to accommodate the six decades long effort of Chomsky.

> Universal Grammar' (UG) is a technical term with changing applications in Chomsky's decades-long attempt to construct a biologically-based natural science of language—of its development in the individual (growth) and the human species (evolution). Its basic sense is something like this: the hidden but scientifically discoverable innate component of the human mind/brain that allows a neonate's mind with minimal input to develop a computational/derivational system that yields an unbounded number of the hierarchically structured conceptual complexes characteristic of a human language. (Mcgilvray, 2017, p. 91)

Berwick and Chomsky (2016) introduced language in the following words: "A language is a finite computational system yielding an infinity of expressions, each of which has a definite interpretation in semantic-pragmatic and sensorimotor systems" (informally, thought and sound) (Berwick & Chomsky, 2016, P. 1).The two quotes are comprehensive enough to umbrella six-decades long effort of Chomsky around which the whole subsequent discussion could revolve. The following discussion attempts to critically review the UG enterprise since its rediscovery by Chomsky, although with a new paradigm, from 1950's to date.

Before beginning to review the modern UG enterprise from its point of departure in 1950, it was important to elaborate, a little more, the empirical side of the three levels of adequacy the generative grammar had to meet (i.e., observational, descriptive, and explanatory (Chomsky, 1964)). the first had to ensure that a fragment of generative grammar could generate correct sentences which were selected as data for linguistic analysis; the second required more than the demand of observational adequacy by

imposing that a fragment of generative grammar should correctly describe what the linguistic intuitions of a native speaker consisted of and "specifies the observed data … in terms of significant generalizations that express underlying regularities in the language" (Chomsky, 1964, p. 63). It implied that observational adequacy was not enough as it was the task of descriptive adequacy to ensure that grammar would assign correct structural description to a sentence, and express certain generalizations about them. Rizzi (2017, p. 108) demonstrated the two levels by analyzing the structure: "The boy will eat the apple" in two different ways. According to the first level it was built by merging a single word with a phrase by X-YP merge which could be represented as: [The [boy [will [eat [the [apple]]]]]]. It satisfied observational adequacy, but failed to satisfy descriptive adequacy. The sequence of words was correct but the analysis failed to capture that *the boy* behaved as one unit in the derivation in many ways. To meet the demand of descriptive adequacy the correct representation would be: [[the [boy]] [will [eat [the [apple]]]]]. This representation showed that phrases *will eat the apple* and *the boy* were merged where both the phrases functioned as separate units. So, a descriptively adequate grammar would recommend an XP-YP merge instead of X-YP. On the basis of this Rizzi clarified the distinction between the two levels as E-language vs. I-language dichotomy. observational adequacy enabled grammar to describe an E-language: an object of the external world (i.e., a sentence or a corpus of sentences); on the other hand, descriptive adequacy enabled to describe an I-language: an internal representational system making a speaker able to generate innumerable sentences by exploiting his/her internal generative function and capturing basic generalizations of language. Hence, the observational adequacy had a very limited domain not enough to capture the whole of linguistic phenomena.

Although descriptive adequacy was of grave cognitive significance, yet it alone could not explain the fundamental linguistic question: "how a person could acquire knowledge of language" (Chomsky, 1977, p. 81) in the presence of a poor input. The third level explanatory adequacy meant that theory of UG had to answer this question to be successful. The pre-generative approaches: the E-language grammars lacked both descriptive and explanatory adequacy as they had no satisfactory answer about the linguistic intuitions of a speaker as well as about the mechanism which enabled him/her

to acquire language. Relying purely on experience as a source of linguistic knowledge an E-language would fail to answer how a child came to have a correct knowledge of language when the stimulus was poor: when the experience was insufficient to provide a child with perfect instruction about correct language usage. For instance, the experimental evidence provided by Crain (1991) verified that a child at the age of three or before had a notion of hierarchical constraint of co-reference. Guasti and Chierchia (1999) also provided the relevant evidence. The presence of knowledge of language before being exposed to required level of evidence led to the introduction of descriptively and explanatorily adequate theory of I-language (i.e., a theory of Universal Grammar).

Chomsky's work in linguistics primarily differentiated between an E-language and an I-language approach for studying linguistic phenomena (Chomsky, 1986a; 1991b). The E-language approach, associated with American structuralist tradition majorly with Bloomfield, aimed to describe the properties of a collected data of language. This data of sentences was considered independent of the properties of mind. In this approach, "a grammar is a collection of descriptive statements concerning the E-language" (Chomsky, 1986a, p. 20). This grammar focused on the regularities found in the sample collected for investigation. On the other hand, an I-language approach was concerned with what a speaker knows about language and what constitutes this knowledge. This approach rejected the common man's notion of language by considering language as an internal component of human brain/mind (Hauser et al., 2002, p. 1570).Thus, E-language was externalized, consisted of a set of sentences, dealt with sentences as actually produced *corpora*, described properties of such corpora, and was concerned with what people had produced. On the other hand, I-language was internalized, consisted of a set of principles, dealt with potential sentences- intuitions of the individual, described the system in an individual mind, and was concerned with what a speaker could do. (Cook & Newson, 2007, p. 14)

2.3 Transformational Generative Grammar

The early work on modern generative grammar began with Chomsky's *Syntactic Structures* (1957), and *The Logical Structure of Linguistic Theory* (1955/1975). In these seminal works, developed in response to his teacher Harris, he introduced the concept of

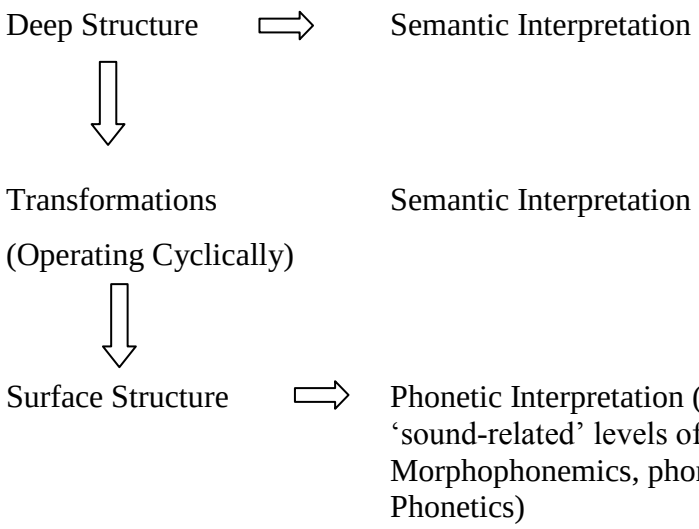
generative (explicit) description of grammar with the help of Phrase Structure (PS) rules, described in the form of rewrite rules (i.e., $S \rightarrow NP, VP$ etc.), which were capable of generating basic structures *kernel sentences* and *transformation rules* which were capable of producing surface structures by altering the basic structures into passive, negative, or interrogative sentences. The simple structures could be extended into infinite complex structures with the help of recursions at transformation levels. This grammar was, thus, titled as *Transformational Generative Grammar (TGG)*. In reaction to *structuralism* and *behaviorism*, this was an attempt to capture the infinity of language by describing its structure in a descriptive generative way. One drawback of the early work was that the recursion did not lie at the base. It was not in PS rules which could allow embedding of structures for formation of more complex structures; rather the recursion was present in transformation rules. The complicated structures were formed by special transformation operations which combined the simple structures generated by phrase structure rules. For instance, the sentence *John knew that Mary understood the theory* was derived by first generating two separate simple structures: *John knew it*, and *Mary understood the theory* by simple phrase structure rules and then inserting the second into first by specialized transformation. The recursion, in this way, resided in transformations instead of basic phrase structure rules.

Chomsky (1965) modified the earlier model presented in *Syntactic structures* by introducing *Aspect* model which was marked by its significant distinction of *competence* (language knowledge) and *performance* (language use); its recognition of *Deep structure* (DS) and *Surface structure* (SS) as new levels of representation of language faculty; and its revision of the mechanism of generating complex multi clause structures. This was a step forwards towards simplicity. As compared to the previous model where PS rules could generate simple sentences with one clause only and the complex structures were supposed to be generated by recursions at transformation level, the new model placed all the information and recursive character of language at basic PS level enabling this level to transform in more complex multi clause structures by singular instead of generalized transformations. Before any syntactic transformation, one Deep Structure underlies a sentence which is formed by PS rules and lexical insertions from lexicon. Thus, grammar was made simpler and infinity of language was discovered at the basic level.

In Aspect model, with an advance towards a simpler grammar, two new levels of representation (i.e., Deep Structure and Surface Structure) were added and several levels of the previous model phonetics, phonemics, word, syntactic category, morphemics, morphophonemics, phrase structure, and transformations (Lasnik & Lohndal, 2013, p. 26) were reduced to two levels: Semantic Interpretation and Phonetic Interpretation. According to the new model, syntactic component had basic part which generated the deep structure, and a transformation part which drew them onto surface structures. The deep structure was submitted to semantic component for semantic interpretation, and surface structure was submitted to phonological component for phonological interpretation. "The final effect of a grammar, then, was to relate a semantic interpretation to a phonetic representation – that was, to state how a sentence was interpreted" (Chomsky 1965, pp. 135–36). The basic model of grammar at this stage could be viewed in figure 6.

Figure 6

The Levels of Representation in Aspects Model (Chomsky, 1965)



(Lasnik & Lohndal, 2013, p. 36)

The grammatical description in the form of rewrite PS rules which remained at the core of Chomsky's early models (1957 & 1965) had problems because of a redundancy between lexical categories and the rules resulting in a lack of explanatory and

descriptive adequacy. These problems ware faced because the PS rules were both language and construction specific. The former means that different languages needed different rewrite rules to capture their respective grammatical structures while the latter means that the rewrite rules for one construction (e.g., a VP could not describe the structures of another phrase like NP, AP, or PP). Moreover, extra information for lexical categories was needed for their adjustment in a particular context of a structure constructed by particular PS rules. This information was present in lexical insertion rules which provided sub-categorized lexical items determined by the context of the Phrase Structure. For instance, transitive verbs like *eat* would require an NP complement as object while intransitive verb like *swim* would not require any such complement. Not even all VP's had rewrite rules like: VP → V NP. The NP was optional. So, their existed a redundancy between lexical information and PS rules which was needed to be eliminated for avoiding the complexity. In this situation, all phrases needed different rewrite rules failing to satisfy the demand of descriptive and explanatory adequacy, generality, and simplicity which were prerequisites for a theory of UG. Lacking all these virtues, the PS rules could not serve the purpose of cross-language and cross-categorical syntactic study. For this purpose, a more generalized theory was needed that could be applied to different languages and different constructions in the same languages as well.

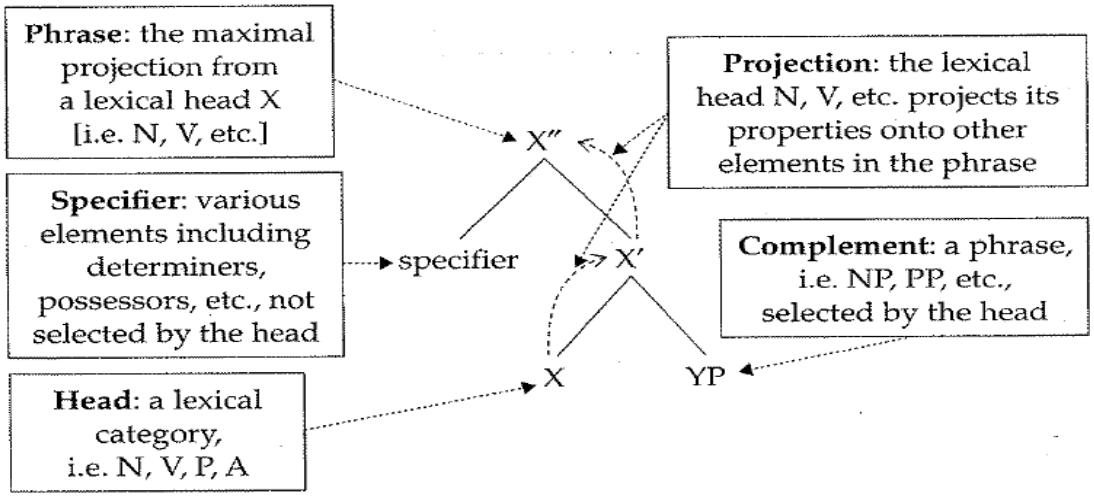
2.4 X-bar Theory

To achieve descriptive adequacy, generality, and simplicity and eliminate lexical information from PS rules, Chomsky (1970) proposed X-bar theory which could accommodate cross-language and cross-category structures under more general rules. Unlike previous PS grammar rules where VP, NP, AP, and PP all needed different re-write rules, Chomsky introduced a schema to describe all these in the form of general rules (i.e., X' →X YP). In this format of representation, X and Y stood for different lexical categories like Noun (N), Verb (V), Adjective (A), or Preposition (P). X was a head which took a complement phrase headed by the other lexical categories. X' notation showed that X could project into more projections every time represented by a bar in the form of a prime (') indicating the level for projection. X" →Specifier X' was the second level of projection indicated by a double bar on X. The introduction of the concept of

complements helped in making the theory more general contributing as every phase was now considered to be projection of a head which projects its properties on the phrase and selects a complement which was sister to head. However, not all the elements in a structure were considered to be selected by heads. To accommodate the pre-head elements in a structure, which were not sister of heads, the concept of specifier (henceforth spec) was introduced. There might be different specs for different phrases (i.e., auxiliaries for V', Possessors and determiners for N', and degree modifiers for A' etc). There remained a debate regarding whether specs were constituents or not. Jackendoff (1977) argued against specs being constituents whereas Hornstein (1977) defended that they were. Figure 7 demonstrates X-bar configuration of two basic relations: Head-complement and Spec-head.

Figure 7

The Basic Relations in X-bar Configuration



(Cook & Newson, 2007, p. 69)

The X-bar theory was not fully general in its initial stage as the rule for base grammar was S → N" V". It was obvious about N" and V" that they were projection of their respective heads, but what about the category labels S and S'. These labels were problematic as they were not projections of any heads. Their existence could not allow a completely general theory, and they were yet to be adjusted in a general phrase structure where every projection would project from a head word. Another problem was the

adjustment of the functional categories like complementiser *that* in the clauses beginning with them. Bresnan (1970) suggested that complementisers (C) are specs of sentences as they appear in the rule: S'→ CS. The issue of S and S' was still a problem as they did not project form a head word.

The discussion will return to the problem of projection after a brief introduction to the concept of Complementiser (labeled C) which plays a crucial role in this study. Complementiser and its major types can be defined in the following words.

> Complementisers are functors in the sense that they encode particular sets of grammatical properties……. (non)finiteness by virtue of the fact that they are intrinsically finite or nonfinite. More specifically, the complementisers *that* and *if* are inherently finite in the sense that they can only be used to introduce a finite clause; by contrast, *for* is an inherently infinitival complementiser, and so can be used to introduce a clause containing infinitival to.(Radford, 2009, p. 6)

Radford provides the following examples to illustrate the two further types of finite complemetisers that and if and one type of infinitival complementiser.

(1)

a. I think [that you may be right]
b. I doubt [if you can help me]
c. I'm anxious [for you to receive the best treatment possible]

(Radford, 2009, p. 6)

In above examples *that* and *if* are finite complementisers. "*That* introduces a declarative clause" which contains the force of a statement, "*if* introduces a declarative clause" which contains the force of a question. *For* is the infinitival complementiser which "introduces an irrealis clause (i.e., one relating to a hypothetical event which hasn't yet taken place and may or may not take place at some stage in the future)"(Radford, 2009, p.6)As evident from (a), (b), and (c) that these complementisers are the elements which determine the force a clause, so question arises who determines the

force of apparently complementiser clauses. This can be studied in clauses (d), (e), and (f) below.

d. We didn't know [if he had resigned]
e. We didn't know [that he had resigned]
f. We didn't know [he had resigned]

(Radford, 2009, p. 112)

In (d) and (e) *if* and *that* respectively determines the force of clauses, they introduce, as interrogative and declarative respectively. What about (f)? There is no apparent C to determine the force of the bracketed clause. For such clauses it is assumed that a null variant of overt C determines the force of clause (Radford, 2009, p. 112). For this reason, it is easy to assume that sentence is the projection of C (i.e., a CP).

Returning to the problem of projection, Stowell (1981, p.70) summarized the X-bar theory in the following points: "a) every phrase is endocentric; b) specifiers appear at the XP-level; subcategorized complements appear within X'; c) the head term is one bar level lower than the immediately dominating phrasal node; d) Only maximal projections may appear as non-head terms within a phrase." (Lasnik & Lohndal, 2013, p.45) According to these limitations presented by Stowell, it could be seen again that the very labels S and S' do not fit into the theory as S was not endocentric and it was not projection of a head word. Before moving on to resolving the issue of S, it is noteworthy here that Borsley (2005), seeking evidence from coordinate structures, highlights problems in assuming the endocentric nature of phrases (e.g., ConjP). Crucially, he argues that "Conjuncts reflect the context in which the coordinate structure appears" (p.464). It is implied from the fact: "what conjuncts a coordinate structure can contain depends on where it appears and where it can appear depends on what conjuncts it contains" (p. 463). The phenomenon can be seen in the coordinate structures containing the verbs *turn out* and *end up* as illustrated by Pollard and Sag (1987, p. 123, as cited in Borsley, 2005, p.464). They argue that these verbs have same semantic selection properties but different syntactic selection properties. Both take a DP and an AP; however, only *turn out* takes an infinitival complement, and only *end up* takes a

participial complement. This variety in syntactic selection can be noticed in structures in (2) below.

(2)

a. Hobbs turned out to like Rhodes and to hate Barnes.
b. *Hobbs turned out to like Rhodes and hating Barnes.
c. Hobbs ended up liking Rhodes and hating Barnes.
d. Hobbs ended up liking Rhodes and to hate Barnes.

(Borsley, 2005, p. 466)

The relation between coordinate structure and conjunct is more complex in the case of NP co-ordination. This can be seen in the structures (e) to (g) below. For the coordinate structure to be in first person at least one conjunct should be in first person as shown in (e); for the coordinate structure to be in second person at least one conjunct must be in second person (f); for the coordinate structure to be in third person the coordinate both conjuncts must be in third person as show in (g)

e. You and I understand ourselves.
f. Hobbs and you understand yourselves.
g. Hobbs and Rhodes understand themselves. (Borsley, 2005, pp. 465- 466)

These evidences lead Borsley to conclude that ConjP's must have different sets of feature specifications in different contexts. For instance, ConjP has a set feature specification in case of non-NP coordination which is different from the feature specifications in case of NP coordination. There are specific cases where a phrase shares some feature specification with a specifier or a complement. For example, *whose book* in (h) shares a feature specification for *wh-ness* with its specifier and *to whom* in (i) shares this feature specification with its complement.

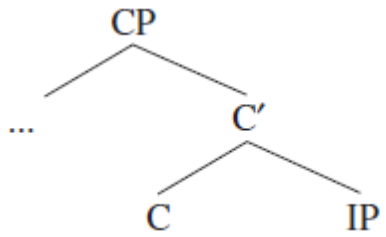
h. Whose book did your read?
i. To whom did you speak? (Borsley, 2005, p. 466)

As we return to the problematic issue of the head of S, it seems that the problem occurred because the early theorizing on X-bar did not give due importance to functional categories like inflections (Inf) and Complemetisers (C). Before Chomsky (1986a) presented X-bar theory, only NP, VP, AP and PP were considered the maximal projections. PP was added by Jackendoff (1977) as it was ignored by Chomsky (1970). At that time S was rewritten as S → NP Inf VP, and S' was rewritten as S'→ C S. In both the rules S and S' failing to confirm X-bar theory.

To resolve the issue of the head of S, Stowell (1981) suggested that the head of S was inflection I (inf). A similar view was presented by William (1981a, p. 251) who viewed that the head of S was tense T. As soon as the issue of head of S was resolved the next step was to consider the head of S'. Stowell (1981) proposed that Complementiser (C) was the head of S' (The discussion on Complementiser by Radford (2009), as mentioned earlier, supports this fact). Now the functional categories Inflection (Inf) and Complementiser (C) could project into maximal projections IP and CP respectively. Sentence was a CP headed by an overt or a null complementiser. With this new conceptualization, the imposition of restrictions on movement become easier by determining what could be placed at head positions and what could be placed at spec positions (Travis, 1984 & Rizzi, 1990a). The simple format of CP construction could be viewed as.

Figure 8

Represenation of Clausal Structure according to Stowell (1981)(Figure 3 repeated)



(Lasnik & Lohndal, 2013, p. 46)

The elimination of S and S' labels from X-bar theory helped in moving towards more generalization. After a considerable development, Chomsky (1986a) proposed that the general structure of X-bar could be expressed as (a). X' = X" X* and (b). X" = X"* X' where X* stands for zero or more occurrences of some maximal projection and X = X^0. Until this stage, the theory had many problems. Particularly, the X-bar configuration stipulated in (a) and (b) did not follow binary branching. This issue with other problems were addressed and resolved in subsequent works. Koizumi (1995, p. 137) highlighted three claims of traditional X-bar theory. First was asymmetry: a node was projected from only one of its daughters; second was binarity: a node might have at most two daughters; third was maximality: A head might project at most two non-minimal projections. For restricting X-bar theory to the principle of binary branching Kayne's (1984, 1994) suggestion was helpful as an independent constraint that all branches in a tree must be binary.

As X-bar theory reduced the syntactic relations to two basic relations: Spec-head and head-complement, there has been debate on the role of specs and complements with relation to heads. The letter was not that problematic as compared to the former as Chomsky (1986a, p. 4) pointed out that specs were optional while complements were selected according to *Projection Principle*: representation at each syntactic level must be projected from lexicon. It implied that the head word selected from lexicon had to choose its complements according to its own properties that it brought from lexicon. However, specs remained problematic and debatable. Fukui and Spease (1986) mentioned that difference between lexical and functional projections was that the functional categories had one unique spec position while lexical categories might have different spec positions which were all licensed. Hoekstra (1991) viewed that specs should be defined through agreement, instead of X-bar theory, as these elements always agreed with their heads. He defined *adjuncts* as elements which did not agree with heads. Many other works also proposed that specs should be eliminated from phrase structure because of their problematic nature (Cormack, 1999; Hoekstra, 1991; Jayaseelan, 2008).

Before moving to the next section, it is important to note that Cullicover and Jakendoff (2005, pp. 112-116) maintain that motivation for binary branches is not very

persuasive on empirical grounds, and minimalism should not merely rely on the theoretical grounds to hold the principal true rather than taking into consideration some other evidence, which support combination of *n* elements where *n* may be more than two. Their skepticism of binary branching is based on empirical evidence which they draw from both outside and inside language. One instance of outside language evidence comes from music of the usual happy birth day song where six concatenated notes of the tune correspond to six syllables of the text to help establish that "the operative recursive principle has to combine *n* elements where *n* can be two or more". This association of the number of syllables to the musical notes may, however, oversight the fact as the internal structure of syllables are binary which is independent of the number of syllables in a text. On second occasion, they reject binary branching assumptions by Kayne (1983) on the basis of c-command relation. It is important to note here that the more recent minimalist framework rejects c-command relation (e.g., Chomsky (2008) and Reuland (2001)) on the basis of both empirical and conceptual grounds. Chomsky holds that c-command has no significance on C-I interface and the conditions fulfilled by the relation in some earlier frameworks may be accommodated under *probe-goal* Agree relation.

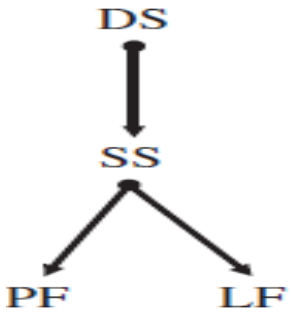
2.5 Principles and Parameters and Government and Binding Theory

The research during 1950's, 1960's, and 1970's kept on moving towards generality, and simplicity; however, the models stipulated during the early three decades of generative syntax could not serve the purpose of cross-language research under a Universal Grammar paradigm as the early approaches yielded language specific PS rules which could not even answer the basic question of linguistic theory: what enables a child to learn any possible grammar of natural languages. A perpetual struggle for finding a universal grammar paradigm underlying all languages of the world and suitable for cross-language research helped Chomsky (1980) to formulate a Principles and Parameters (P&P) theory that would consist of principles invariably present in all human languages, and parameters to capture the variation among languages along a limited parametric setting. Universal Grammar through P&P did not assume that all languages were same but that their variation could be captured along universal parameters.

The early version of P&P theory that dominated the UG research during 1980's was Government and Binding (GB) theory which divided grammar into different modules which served to filter out ungrammatical structures by imposing constraints on a general theory of grammar. There was only one transformational rule 'move alpha' which allowed any element to move anywhere. However, restrictions were imposed by different distinct modules of grammar (i.e., Case Theory, Theta criterion etc.) to avoid ungrammatical structure. The central grammatical relationship was government that held in all distinct modules of grammar. GB theory assumed four levels of representation (as shown in the figure 9): DS, SS, PF, and LF where the conditions imposed on UG had to apply. The DS (Deep structure), SS (Surface structure) and LF (Logical form) together formed the syntactic levels of representation.

Figure 9

The Levels of Representation in Government and Binding Theory



(Boskovic, 2013, p. 96)

In order to instantiate how different modules of grammar worked, it could be noticed that a separate module of grammar was required to determine the positions of all overt NP's in a grammatical structure by allowing them only those places where case might be assigned. There were structural positions which could allow certain case positions. For instance, the subject position allowed nominative case while object position allowed accusative case as in *He likes her* is grammatical because it satisfies the case filter. A structure, however, had to pass through many other modular filters to be grammatical. For instance, the passive structure like *was arrested Mary* did not satisfy Extended Projection Principle (EPP) which constrained all finite clauses to have a

subject. Moreover, passive verbs could not assign case. The EPP could be satisfied by introducing an expletive subject *it* as in *It was arrested Mary*, but this construction again failed to satisfy case filter. To satisfy both the filters the lexical item *Mary* needed to be moved to subject position as in *Mary was arrested.* GB model introduced many such modules of grammar that were to be satisfied to obtain a grammatical structure (Boškovic´, 2013, p. 96).

Before reviewing different modules of GB theory, it was very important to notice that the status of X-bar theory grew more important and it was at this point where this notation eliminated PS rules altogether by relying on the Projection Principle, introduced by Chomsky (1981, p. 29), which required that properties of lexical items should be constant throughout the derivation. This could be simply demonstrated in a way that if in a construction generally stated in terms of X-bar notation as X" → X' YP and X' → X YP, the Projection Principle would hold that if from lexicon an item was selected from a particular category (e.g., verb V), this lexical item would project its properties on different levels of projections thus X' will be V' and X" will be V". With the help of this UG principle, X-bar was freed from the burden of defining category specific aspects of structures and it could be a general constraint on all structures in all languages. Now the elements selected from lexicon would bring with them their own properties and these properties would be projected under the constraint of X-bar and different modules of grammar.

Apart from categorical properties, lexicon projected its thematic properties onto syntax with the help of *theta –criterion* (Chomsky 1981, p. 36) which constrained that every argument should bear one and only one theta-role, and each theta-role should be assigned to one and only one argument (The term argument existed in relation to and governed by the predicate: a verb which assigns theta role to it. Hence, predicate expressed a state or a relationship and an argument was something that played a role in that relationship e.g., in the structure *He likes her likes* is the predicate while *he* and *her* are arguments). To take an example of a transitive verb *meet*, the *theta-criterion* insisted that it must assign two roles- agent and theme- to two of its arguments- one in subject position and one in object position. Thus, the clause *He meets* would be ungrammatical as

the verb could assign the role of *agent* to the pronoun *he,* but there was no argument to assign the role of theme. *He meets her* would be grammatical as there were two arguments to which thematic roles might be assigned. There are other types of verbs (i.e., intransitive, unaccusative, unergative etc.) which all take different arguments and assign different theta-roles to them (Corver, 2013, p. 377).

Theta criterion joined with a sisterhood condition to complete theta-theory as a separate and a very significant module of grammar. A category might mark theta role according to this condition as defined by Chomsky (1986b, p. 13): "θ-marking meets a condition of 'sisterhood' that is expressible in terms of X-bar theory ...: a zero-level category α directly θ -marks β only if β is the complement of α in the sense of X-bar theory". This condition could be easily applied to the theta marking of verbs to objects which were their complements and sisters under the same projection level (i.e., V'). However, unlike objects, subjects could not be marked by the verbs in the same direct way. Owing to this distinction, Williams (1980) labeled objects as internal arguments (IA) and subjects as external arguments (EA). The practice of considering subjects merely as EA, which emerged outside of VPs, came in the way of satisfaction of sisterhood condition by raising a question that if the subject originated outside a VP how could its head, the verb, mark a theta role to an argument which was outside it. In order to cope with this problem VP-internal subject hypothesis was introduced to assume that subject originated within VP and its original position was Spec-VP instead of Spec-IP. It moved from its former position to the latter to appear at S-structure. This view was favored by Kitagawa (1986) and Koopman and Sportiche (1991) who rejected the view that the position of subject was Spec-IP. This argument was based on the claim of Stowell (1981) that subjecthood was the requirement of a lexical phrase VP instead of a functional phrase IP, so subjects could originate at Spec VP position.

The issue of the origination of subject as Spec-VP position was not the final destination of subject to originate from. After it was accepted that the subject originated at a lower position than Spec-IP position, a new idea was that its position was not as lower as Spec-VP position even. Larson (1988) and Chomsky (1995b) viewed that it originated at Spec-*v*P, a position higher than Spec VP and lower than Spec IP (Chomsky

labeled this new projection level as *v*P containing a small *v* differentiating from capital V of VP phrasal projection, but Larson labeled it as additional VP). In this new framework of verbal structures, there were two layers *v*P and VP; the former marked theta role of agent to subject, and the latter marks theta role to the object. A rational of this could be found in the fact that V+O could form a meaning unit while S+V could not. It entails that subject was loosely attached to the verb as compare to object which had a relatively strong binding with verb. This could also be traced in Marantz's (1984) observation that there were V+O idioms, but there were no S+V idioms.

A strong argument in favor of the existence of small *v*P layer containing the functional head *v* (the light verb) , along with the VP headed by the lexical V, could be found in the analysis of structures containing ditransitive verbs. The concept of the *v*P type structure originated in the analysis of such structures by Larson (1988). For instance, we had two constructions containing ditransitive verbs as shown in (1) below.

(1)

a. John will show Sue herself (in the mirror).

b. John will show Sue to herself.

(Corver, 2013, p. 382)

In both (a) and (b) there is a *goal* (*Sue*) *–theme* ((*to) herself*) word order. In both the cases reflexive pronoun *herself* refers to *Sue*. If the word order is reversed to theme (*herself*)-goal (*Sue*), it will result in an ungrammatical structure. This has been mentioned by Barss and Lasnik (1986) that this reverse order cause asymmetric binding relationship. Larson (1998) presented a solution to this asymmetrical relationship. In his view this was caused by the fact that the *goal* and *theme*, both in (a) and (b), c-commanded the reflexive pronouns in different ways. If an extra functional *v*P layer is introduced to the structure, both the *theme* and the *goal* could be accommodated in VP (i.e., one as the Spec of VP while the other as complement of V). The Spec will c-command V in this way. At the surface structure the V will be moved to functional head *v* position. The analysis of the constructions 1 (a) and (b) could be demonstrated as in 2(a) and 2 (b) respectively.

(2)

a. [IP Johni [I0 will [vP ti [v0 showj [VP Sue [V0 tj herself]]]]]]

b. [IP Johni [I0 will [vP ti [v0 showj [VP Sue [V0 tj to herself]]]]]]

(Corver, 2013, p. 382)

The small indices in 2 (a) and 2 (b) demonstrate the traces of moved elements. It is clear from both derivations that the verb *show* moves from lexical V to functional *v* position and the subject *John* moves to spec-IP position.

Not all subjects appear at S-structure and receive a phonological realization. This can be observed in the complex structure (3) below.

(3) The police$_i$ tried [PRO$_i$ to uphold the rules] (Polinsky, 2013, p. 585)

In (3), the two verbs *tried* and *uphold* needed two different arguments to assign different theta roles to each. If both the verbs assigned the theta roles to the same subject DP *the police*, the theta criterion would be violated. Moreover, EPP (Chomsky, 1986a, p. 116) demanded that the embedded infinitival clause *to uphold the rules* must have a subject. To fulfill this requirement an empty category PRO was introduced. The Pro Theorem (in Binding Theory) restricted PRO's position to the subject position of the infinitives which couldn't be replaced by an overt NP. The rationale for this distribution was that the former could occupy a caseless position (i.e., the subject position of the infinitive clause) where the latter could not be placed.

The systematic interpretation of reference of empty category PRO was determined by a separate module of grammar: *Control Theory* (Chomsky, 1981a, p. 6). The element which fixed the reference was called controller. In some cases, objects were considered to control reference while in other cases subject functioned as controller. This can be instantiated in structures (4) below.

(4)

a. I requested the student [PRO to stop wasting his time]

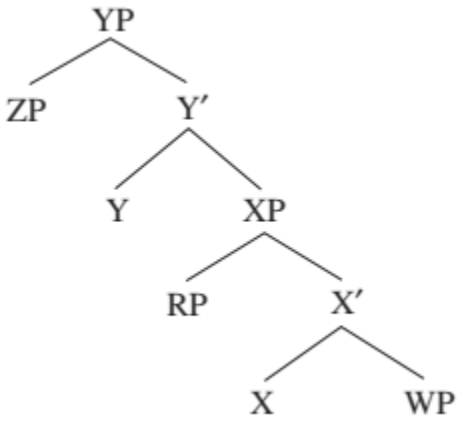
b. The student promised me [PRO to stop wasting his time'.

In 4 (a) the object controls the reference of the PRO while in 4 (b) the subject controls the reference. This is in accordance with Minimal Distance Principle of Rosenbaum (1967) who suggested that PRO's controller should be the closest possible antecedent which could c-command it. Chomsky and Lasnik (1993) tried to bring PRO under the domain of case theory by suggesting that infinitival could assign a special null case to PRO. This was, however, modified by Landau (2001, 2002, 2004, 2008) who eliminated the concept of null case and established that PRO could be assigned lexical case like other overt DP's. His argument was built on the basis of his studies on languages like Hungarian, Russian, Icelandic, and German.

With reference to GB theory, it is important to review PRO in terms a very crucial relationship called *government*. Safir illustrates *government* through figure (10).

Figure 10

Illustration of The Relation Government by Safir



(Safir, 2013, p. 531)

> A head (X^0) is understood to govern anything immediately dominated by one of its projections, as well as the head of its complement, but could only govern into the specifier of its complement if the complement were IP (e.g., not CP or DP). Thus, in the schematic diagram in (35=above figure 10) Y governs ZP, XP, X^0 and X, but not RP or WP, unless XP is in fact IP, in which case Y would also govern RP. (Safir, 2013, p. 530)

From this scheme, it was obvious that government was a relationship between a head and the elements it governs. Therefore, the lexical heads noun, verb, adjective, and preposition were proper governors which governed their complements while finite inflection was improper governor which governed subject (i.e., the spec of the complement of inflection). However, non infinite inflection was not a governor at all, so its subject position was ungoverned. This led to establish that PRO sat in an ungoverned position unlike overt DP's: subjects and objects which occupied governed positions.

English cannot drop overt DP's from subject or object positions of finite clauses leaving them empty categories as it does in the case of PRO, but there are languages like Italian which can afford such categories, as null subjects of finite clauses, by giving them a null spell out. For instance, the Italian construction "Maria Parla Francese*"* has its English counterpart *Maria speaks French.* Italian can drop the subject NP *Maria* leaving a grammatical construction behind: "Parla Francese"which is not possible in English as evident in an ungrammaticality of the structure "*speaks French" (Radford, 2004, p. 12). So, possibility of having null subject or not was a major parameter which allowed languages to vary as pro-drop or non pro-drop languages. To differentiate this phenomenon from PRO, it was abbreviated as little pro. Rizzi (1982) took the first significant position regarding the properties of pro-drop and non pro-drop languages. He argued that the strong agreement system of a language allowed it to be a pro-drop language entailing that the languages with weak agreement system were non pro-drop languages. If English verb *walk* was compared to its Hungarian counterpart *setal*, English verb had only two agreement forms for present simple tense *walk* (for 1st sing. and pl., 2nd sing. and plural. and, 3 rd pl.) and *walks* (for 3rd sing.); on the other hand, Hungarian had six different agreement forms: *setal-ok (1st sing), setal-sz (2nd sing), setal (3rd sing), setal-unk (1st pl.), setal-tok (2nd pl.), and setal-nak (3rd pl.)* (Cook & Newson, 2007, p. 92). The rich agreement system of Hungarian made it a pro-drop language and the poor agreement system made English a non-pro drop language.

Rizzi (1982) enlisted three general properties of the pro-drop languages: They did not have the pleonastic subject, they had the ability to invert subjects with VP's, and their wh-elements moved more freely out of certain clauses. Rizzi (1986) modified his

previous analysis by adding that there must be certain licensor to license the existence of pro, and the content of the pro must be recoverable from the licensor. The licensors varied from language to language according to parametric variation of the language (e.g., Hungarian possessed a nominal licensor while Italian has a verbal licensor). Most of the languages, however, took finite inflection to license pro. The recovery of the content of pro could be exemplified in the case of the Hungarian verb *setal,* as it allowed a pro subject because of its six verb forms, showing a strong agreement, the number and gender of the subject could be recovered. Rizzi's study was a good beginning towards developing a framework for analyzing pro; however, his stance was questionable as different languages which did not possess the properties enlisted by him, but they were pro-drop languages and vice versa (e.g., Chinese had a poor inflection system so it should not have been a pro-drop language). The Chinese verb *shou* (*speak)* had no different agreement forms to show gender and number. Despite of a weak agreement system Chinese is a pro drop language. To address this problem, Jaeggli and Safir (1989) proposed that morphological uniformity determined the status of a language as a pro-drop. The languages were either +uniform or – uniform. + Uniform languages allowed pro-drop. Returning to the comparison of the same verb in three languages-Chinese, Italian, and English-this condition could hold. Chinese verb *shou* and Italian verb *parla* has a uniform morphology so they are pro-drop languages, but English verb *speak* does not show uniformity in verb forms which makes it a non-pro drop language.

Apart from null DP's the overt ones may have different forms in different structural positions. In the English structures *He told her* and *She told him* the pronouns *he* and *him* both refer to third person masculine singular, but they have distinct forms, similarly *she* and *her* are two distinct forms despite of referring to same person, gender and number. This difference is due to the occurrence of the pronouns at different structural positions of the sentence (i.e., subject and object). Unlike pronouns, English nouns have same forms in all structural positions as in *John told me* and *I told John*, but there are languages like Hungarian where nominal take different forms as in "Janos elment (John left" and "Latom Janost (I see John)" the nominal *Janos* has different forms *Janos* at subject position and *Janost* at object position (Cook & Newson, 2007, p. 146). This property of DPs, pronouns, and nominal is known as *case*, and the module of grammar that deals

with the phenomenon of assigning different cases to different nominal at different structural positions is called *Case Theory* which according to "dealt with assignment of abstract case and its morphological realization" (Chomsky, 1981a, p. 6). The concept of *abstract case* made case a universal property of all languages whether their case was morphologically realized as in the above example of Hungarian noun *Janos*, or it was not overtly realized as in the English noun *John*. The basic principle was case filter: "every phonetically realized DP must be assigned case" (Chomsky, 1986a, p. 74).

Chomsky (1986a, p. 193) further divided case into two types: structural and inherent. The former was assumed to be assigned at S-structure position and assigned independently of θ-role marking as nominative and accusatives were structural cases which were assigned to DP's at subject and object positions independently of θ-roles. The inherent cases (e.g., dative and genitive cases) were assumed to be assigned in association with θ-roles. Thus, it was assumed that α might assign inherent case to a DP if and only if α θ-marks that DP. Baker (2013, p. 609) discussed *case* in relation to *agreement* viewing that both were similar and most important devices which natural languages used to express the functional and thematic roles the noun phrases had with verbs. He quoted example of Indo-European languages wherein a verb agrees with a noun phrase if and only if the latter is in a nominative case. For instance, in Hindi, the case of subject is determined by tense-aspect of the clause that goes in direct relation to agreement. The subjects bear nominative case in imperfective clauses while they bear ergative case in perfective clauses. As a result, in imperfective clauses verbs agree with subjects, but in perfective clauses they don't. This can be seen in (5) below.

(5)

a. Anil kitaabẽ becegaa
   Anil-nom book-f.pl sell-fut.m.s
   (Anil will sell the book.)

b. Anil-ne kitaabẽ becı˜'
   Anil-erg book-f.pl sell-f.pl
   (Anil sold the book.) (Mohanan, 1995, p. 83)

In Hindi imperfective clause 5(a), the subject *Anil* is in nominative case; therefore, the verb *becegaa* agrees with it. On the other hand in the perfective clause 5(b) the subject *Anil* is in ergative case, so the verb *becı̃* agrees with the object.

A very significant module of grammar introduced primarily to constraint movement operations was *Locality Principle* (LP) constraining that all movements should be shorter within a limited domain of the sentence. 'Transformations cannot move a phrase too far in a well-defined sense' (Chomsky, 1986a, p. 72). This can be verified by moving *wh*- elements to different positions in a clause. In English interrogative structures, wh- element moves to the front of the clause. The LP imposed a condition on the movement that the moving *wh*-word would move to the nearest vacant place adjacent to it by travelling shortest possible distance. For instance, the construction *I asked who John likes*_is formed by moving *who* in front of the subject of the same clause *John*. The actual structure before movement was *I asked _ John likes who*. This movement resulted in a grammatical structure as the *wh- element* moved by observing LP. Comparing this with another wh-movement in the construction **I asked who Jack wondered why John likes*_ which is ungrammatical, the difference between grammaticality of the former and ungrammaticality of the latter lies in that the latter construction (where wh-word *who* travels too long to jump a clause already containing a wh-word *why*) did not satisfy the LP. A similar phenomenon can be traced back in Ross's (1967) *wh- Island constraint*: the clauses already containing a wh-word at their initial position were wh-Islands which constrained the movement of some other wh-words over them. This could be instantiated in the above ungrammatical example where a wh-word *who* moved over the island containing a wh-word *why* at the initial position of the clause.

Being a UG principle *Locality* could be observed across languages. Cook and Newson (2007, pp. 39-40) mentioned examples from German, French, and Arabic to highlight how these languages observed locality in movement and references. To start with German, the constructions involving inversions follow locality constraints; for instance, *Liest Hans das Buch? (reads Hans the book?)* is a yes-no question formed by moving verb *Liest (read)* to the front of the structure, but in another structure *Hat Hans das Buch gelesen? (Has Hans the book read?)* the auxiliary *Hat(has)*moves to the front

instead of the verb. Had the verb *gelesen* moved to the front instead of auxiliary *hat*, it would have rendered an ungrammatical structure**Gelesen Hans das Buch hat?* Same is the case with French wh-question constructions where the inversion of verb takes place if there is no auxiliary, but the inversion of auxiliary with the subject takes place if it accompanies the verb. *Quand lit-il Ie livre? (When reads-he the book?* is a wh-qustion wherein along with the movement of wh-element the verb *lit (reads*) moves to the front of the subject, but in the structure *Quand a-t-il lu Ie livre? (When has-he read the book?),* the auxiliary *a-t-(has)*moves to the front of the subject instead of the verb. In both Germen and French the auxiliary inversions movements invert auxiliaries instead of verbs because their movement are shorter, hence abiding by Locality Principle. Locality Principle is, however, not limited to movements and inversion operation; it may be extended to other linguistic phenomena like referential qualities of pronouns. The Arabic example in (6) belongs to this category.

(6) *Qala* *Ahmed* *ann* *zaydun qatala* *nafsahu*

say-pst Ahmed that-C Zaid kill.pst himself-refl.prn.

(Ahmed said that Zaid killed himself) (Cook & Newson, 2007, p. 40)

The reflexive pronoun refers to the closest antecedent *Zaid* instead of referring to far off antecedent *Ahmed*. This is in similarity with English which restricts its reflexive pronouns to refer to the closest antecedents as in *Jack thinks John beats himself,* the reflexive himself refers to John , a closer antecedent, instead of *Jack* which is far off to be referred to.

The modules of grammar reviewed so far and others were considered to apply primarily at two purely syntax internal levels of representation DS and SS as stipulated in GB theory. The former described the basic organization of grammatical structures while the latter described the structures obtained after transformation/movement. By virtue of such operations, elements generated at certain DS positions would move to specific SS positions. The early research in generative syntax put no constraints on transformations and it was assumed that transformations could produce structures without any type of restrictions on them. However, the demand of explanatory adequacy urged to constraint

the movement/transformation operations more and more. This could make transformation rules more simplified and generalized. Chomsky (1977) highlighted three types of movement rules responsible for generating several structures. These were A-movement, A'-bar movement, and head movement.

A-movement referred to the movement of a DP into a potential A-position (e.g., the subject of the sentence). "An A-position is one in which an argument such as a name ... may appear in DS" (Chomsky, 1981a, p. 47). This type of movement could be seen in many constructions. The most common was passives where a DP, originated at object position in DS, would move to subject position to appear at SS level. For example, the passive form *The rule was amended* was constructed from the active form generated at D-structure as *The lawyers amended the rule*. The movement operation occurred in the construction of passive form could be explained in terms of Uniform Theta-Role Assignment Hypothesis (UTAH) as put forth by Baker (1988) who assumed that arguments which possessed the same theta-role secured the same position at DS. It implied that in the example, just quoted, the argument *the rule* was generated at object position in the DS. The movement operation moved it to the subject position which could receive arguments bearing theta-roles. A-movement could occur in every other type of construction (e.g., containing raising verbs, accusative verbs etc.) where a verb allowed DP's to move to subject position.

There were other types of movements where an element was not moved to an A-position. One such movement was wh- movement which caused a wh-word to move to the front of a clause- at spec-CP position. Wh-elements, being a phrase, could not move to C position which could only be occupied by a head. The wh- element "Which book John has read?" moved to the spec-CP position which was not an A-position. This type of movement was called A'-movement. The bar on A refers to non-argument positions - "A'-positions": in particular the clause-external positions occupied by operators such as *who* (Chomsky, 1986a, p. 80). Another difference between A and A' movements was that the former only involved the movement of DPs while the latter might move AdvP's and PP's. This can be noticed in the interrogative construction (7) below.

(7)

a. How bad the boy appeared?

b. By whom your book was recovered?

In 7(a) the AdvP *how bad* moved to clause external position. In the same way in 7(b) the PP *by whom* moved to the front of the clause.

Both A-movement and A' movement involved movement of phrases instead of the heads of the phrases. There was a third type of movement which moved the head of a phrase instead of a complete phrase. This was termed as Head movement. The most obvious example of such movement was subject auxiliary inversion. In English interrogative clauses the auxiliary moved to the left of the subject.

(8) Will they come tomorrow?

In the interrogative construction (8) the auxiliary *will* moved from head I position to head C position. As in wh-movement the wh-element could not move to head C position, the place was vacant for the auxiliary to move to from head I position. In the interrogatives constructed by both wh-movement and auxiliary movement, the wh-elements moved to Spec-C position while auxiliary is supposed moved to head C position. Comparing auxiliary movement with other languages, it was important to note that English did not allow verbs to move. The construction *they arrived late* could not be transformed into *arrived they late?* In the constructions which had no auxiliary to move to the left of subject, English introduced and expletive auxiliary *do* (e.g., *Did they arrive late?)* The phenomenon is known as do-insertion. However, there are languages which allow their main verbs to move under head movement. For instance, the formation of questions in French would allow main verbs to move.

(9)

a. Avez-vous chante dans la classe?
   (Have you sung in the class?)

b. Chantez-vous bien?
   (Sing you well?) (Cook & Newson, 2007, pp. 128-29)

The French interrogative construction (9a) is similar to English as the French auxiliary *avez (have)* moves to the front of the clause instead of the main verb, but in (9b) the French main verb moves to the left of the subject owing to the absence of some auxiliary. The languages like French which allowed their main verbs to move to the left of the subject would not require do-insertion

Before a review of what happened to movement operation during the development of GB theory of UG, it was important to recall that the constraints on the transformation operations, imposed to satisfy explanatory adequacy, were taken out of transformation rules and introduced in the form of general principles of grammar. Thus, a single very simplified transformation rule- "Move any category (α) anywhere" (Chomsky, 1982, p. 15) - was introduced. The requirement that a free movement of any category to anywhere should be restricted to avoid ungrammatical structures was fulfilled by general principles applied to X-bar theory. As it was found during the review of PS rules that these rules were simplified in the form of X-bar phenomenon where the selection form lexicon determined the different aspects of the structure. For instance, if a particular category like a transitive verb is selected form lexicon as a head of a phrase, it would project its properties to different projection levels according to projection principle (i.e., it would determine the category of the phrase headed by it as a verb phrase, and it would take a direct object (DO) as its complement). This was related to organization of basic structure at DS level. In the same way, if SS was also determined by information projected from lexicon, it would entail that movement could not alter a structure. Hence, the structure before movement should have to be preserved after movement.

In order to capture the phenomenon of structural preservation, the concept of trace was introduced: when "a category is moved by a transformation, it leaves behind an empty category, a trace" (Chomsky, 1986a, p. 66).

(10) The house$_j$ was built t_j

In the passive construction (10), the object *the house* when moved to the subject position left behind a trace shown as *t*, and both the moved object and the trace were co-indexed with each other as shown by the attached subscript $_j$. A structural discrepancy

might occur if it was assumed that the trace left behind after movement operation bore the same theta-role as born by the original moved element, the theta criterion (which imposed a constraint that only one theta-role could be assigned to one and only one argument) would be violated because the same theta-role could not be assigned to both the moved element and its trace. To cope with this problem, the concept of chain was introduced. "A chain was the S-structure reflection of a 'history of movement', consisting of the positions through which an element had moved from the A-position it occupied at D-structure" (Chomsky, 1986a, p. 95). So, the construction *'When$_1$ is$_2$ the match t$_2$ t$_1$?'* has two chains: (When$_1$, t$_1$) and (is$_2$, t$_2$). It was considered that each chain functioned as a single entity. This helped to fulfill theta criterion in a rather modified way. Now it was convenient to assume that every theta-role could be assigned to one and only one argument chain and every argument chain could possess one and only one theta role.

A chain could reflect more than one movement of an element then why could not an element jump too long to reach its destination in one movement? An element moved in shorter steps as it was bound by certain constraints imposed by *bounding theory*. An earlier conceptualization of such restrictions could be found in Ross's (1967) wh-island constraints. A more general approach was adopted by Chomsky (1973) under the title of subjacency condition: "No rule could involve X and Y, with X superior to Y, if Y was not subjacent to X" …… [The] Condition had the effect that a single movement step must not cross more than one cyclic or bounding node (as mentioned in Dikken & Lahne, 2013, p. 662).

(11)

a. * [$_{CP}$Who$_i$ did [$_{IP}$she think [$_{CP}$ when [$_{IP}$he saw t$_i$]]]]

b. * [^{CP} Who^i did [^{IP}she hear [^{DP}the news [^{CP} t^i that [^{IP}he saved t^i]]]]]

The derivation in (11a) is ungrammatical because the moved wh-element crossed two IP nodes and one CP node. According to *subjacency* condition it implied that IP was a bounding node. In a similar way, the construction (11b) was ungrammatical even though wh-element moved in two steps crossing one IP node in each. It further implied that DP was also a bounding node as in the second step of movement the moved element

crossed an IP and a DP together. The bounding nodes differ parametrically in different languages. For instance, Rizzi (1982) observed, on the basis of empirical study, that bounding nodes for Italian were CP and DP instead of IP and DP.

Both *wh-Island* and *subjacency* had shortfalls which needed to be addressed. First, the former approach was construction specific while the latter was language specific. Secondly, there were constructions for which no account was provided by either of the two approaches.

(12) $^{*}[_{CP}$ Who$_i$ was$_j$ $[_{IP}$ $[_{CP}$ t_i that $[_{IP}$ you saw $t_i]]$ t_j suddenly]]?

In (12) object of the verb *see* first moves to the Spec-CP position of its own clause and then to the Spec-CP position of the matrix clause. *Subjacency* condition did not account for how this structure was ungrammatical as the moved element crossed only one bounding node in each step. So, a more general approach was needed to address the bounding phenomenon. Chomsky (1986b) introduced the *barriers* approach to solve the problem. He replaced the notion of bounding nodes with a more encompassing concept of *barrier*. According to this new approach, any construction could be a barrier to movements not because of its properties, unlike bounding nodes and wh-islands, but because of its situation in a structure. Structures in (13) could be studied to study this phenomenon.

(13)

a. $[_{CP}$ Who$_i$ did $[_{IP}$ you present $[_{DP}$ a gift to $t_i]]]$?

b. *[When$_i$ did $[_{IP}$ she meet john $[_{DP}$ the day before $t_i]]]$?

The grammaticality of (13a) and ungrammaticality of (13b) lay in the fact that it was possible to extract a wh-element from an object position of a complement as in case of the former, but impossible to do the same from an adjunct as in case of the latter. In both cases the wh-elements crossed IPs and DPs which according to *subjacency* condition were bounding nodes blocking any movement over them. Thus, Application of the *subjacency* condition on both structures should have led to ungrammaticality. However,

the grammaticality of 13(a) confirmed that it was not the properties of constructions which made them bounding elements instead it was their position in a structure which made them barriers. Complements allowed elements to move out of them, but adjuncts and subjects did not.

Counter to Chomsky's above-mentioned analysis, Chaves (2012) provides interesting evidence to maintain the possibility of extraction from adjuncts and subjects.

(14)

a. Who did you go to Girona in order to meet?
b. Which president would the Impeachment of cause more outrage?

In 14(a), the wh-element *who* is extracted from the adjunct *in order to meet.* Similarly, in 14(b) the wh-element *which* moves from within the subject *the president of which.* It is important to note that in both cases the wh-elements are extracted either from the complement of VP, as evident in the former case, or from the complement of PP position, as in the latter case. In light of this the stipulation of extraction from complements may be broadened to the other elements adjuncts and subjects while simultaneously helping in revisiting the oft adopted proposal that extraction from adjuncts and Specifiers/subjects is not possible.

If complements were not *barriers* to movements while non-complements were, it was easy to observe that the former were linked to the lexical heads in relatively direct way as compared to the latter. The former were directly selected by the lexical heads while the latter were not. "A potential barrier may be exempt from barrierhood by an appropriate relation to a lexical head" (Chomsky, 1986b, p. 12). Chomsky further utilized the concept of L-marking to capture the relationship between different elements of a construction: complement was an L-marked construction as it was directly selected by the lexical head while adjuncts and subjects were non L-marked constructions as they were not selected by the lexical heads. In light of L-marking property, it could be theorized that all non L-marked constructions were *barriers* to movements. However, there was one exception: an IP was neither L-marked nor a *barrier*. To solve this discrepancy, Chomsky introduced the term *blocking category* to refer to elements which were potential

barriers as they were not L-marked. IP qualified this category. Thus, *barrier* version of bounding claimed that any movement crossing a barrier was ungrammatical; all blocking categories were barriers except IP; all blocking categories were not L-marked; and all the constructions selected by lexical heads were L-marked.

According to Chomsky's barrier version a category [YP] was an "(inherent) barrier if it was not L-marked i.e., if it did not stand in a theta-government relation with respect to a lexical head". In addition to it, a category [ZP] could also become a barrier if it dominated a category [YP] which was a barrier (Corver, 2013, p. 392). This additional possibility of barrierhood implied that a category could inherit barrierhood from a category dominated by it. As an example, Chomsky made CP a barrier by inheritance for an element inside the IP. "Let us suppose that CP inherits barrierhood from IP, so that CP will be a barrier for something within IP but not for something in the pre-IP position" (Chomsky, 1986b, p. 12).

(15)

a. She knows [$_{CP}$ [$_{IP}$ he likes who]]
b. She knows [$_{CP}$who $_{i}$ [$_{IP}$ he likes t_i]]?
c. Who$_i$ she knows [$_{CP}t_i$ [$_{IP}$ he likes t_i]]?

In the construction (15a) CP was L-marked, so it couldn't be an inherent barrier. However, it dominated IP which was a blocking category, so it would inherit barrierhood from IP. As a result of this inheritance, the wh-element could move out of IP as it was a blocking category not a barrier, but it couldn't move out of a CP which was a barrier now. To avoid any ungrammatical step wh-element would move out from IP to the spec-CP position which was inside CP as shown in (15b). As soon as the wh-element moved out of IP, it could not inherit barrierhood to CP any more. Now, the barrierhood of CP would depend on whether it was L-marked or not. It was very clear from the construction that CP was L-marked by the verb, so the wh-element could now move out of it ending in a grammatical structure (15c). Thus, a modified definition of barrier would be that a construction X would be a barrier for α if and only if it is a blocking category for α (other

than an IP) or it dominates a blocking category Y for α, and a constriction which contains α and is non L-marked is a blocking category.

Reviewing barrier version of *boundness* in terms of government relationship Dikken and Lahne (2013, p. 670) maintained that what Chomsky (1986b) proposed was usually referred to as a *rigid minimality* which considered that if α (a head) was a close governor to β, α would not allow β to establish any type of government relationship with a distant governor ϒ, irrespective of the nature of relationship between β and ϒ. It meant that α would intervene in establishment of both types of relationships- head-government (the relationship between head and a phrase) and antecedent-government relationship (the relationship between a head and a head or between a phrase and a phrase). It implied that a head could be a barrier for non-head constructions which was problematic. This complication was resolved by Rizzi's (1990) *Relativized Minimality* approach according to which a closer head could stop its governed element to establish a government relationship with some distant head; an element in A-position could intervene between the establishment of relationships between elements of A-position; and an element in A'position could intervene between two A'elements. Elaborating in terms of barrierhood a head might be a barrier for head movement; an *argument* might be a barrier for A-movement; and an element in A'- position might be a barrier for A-bar movement. In that way, Rizzi proposed a simplified version of movement which could be summed up as: a head must move to the nearest head position avoiding to cross over an intervening head; a argument must move to the nearest A-position avoiding to jump over an intervening head; and an element at A' position (i.e., wh-element) must move to the nearest A-bar avoiding to jump over any intervening A' element.

The modules of grammar discussed so far under GB Theory relate either of the two levels of representation: SS and DS. However, there was a module which demanded for some extra level of representation (i.e., LF (Logical Form)). This last but not least module would be discussed under *Binding Theory* which was "concerned with the relations, if any, of anaphors and pronominal to their antecedents" (Chomsky, 1982, p. 6). This theory was based on three principles to describe the relation of three different types of DP's-anaphors, pronominal, and R-expressions-with their antecedents. These three

principles were: A) – "an anaphor (e.g., a reflexive or reciprocal) must be bound in its domain"; B) – "a pronoun must be free (not bound) in its domain"; and C) – "an R-expression (e.g., a name, a variable) must be free (everywhere)" (Hornstein et al., 2005, p. 241). Domain here was defined as α is the domain for β iff β is the smallest IP containing β and the governor of β. In similar terms binding is defined as 'α c-commands β' and the former is also co-indexed with the latter. Structure (16) can be studied in this regard.

(16)

a. *[Jack$_i$ thinks that Jill likes these picture of himself$_i$]

b. [Jack$_i$ thinks that Jill likes these picture of him $_i$]

The construction (16a) is ungrammatical because it violated principle A as the anaphor *himself* was not bound in its domain: the IP containing it and its governor. Replacement of anaphor by a pronoun *him* would lead to grammatical structure (16b) because of observing principle B.

Binding Theory had an effect on movement as there were structures which fulfilled the requirements imposed by the principles of the theory on some movement operation. It led to assume that this theory had a role in complete description of Empty Category Principle which demanded that all traces must be properly governed (Chomsky, 1981). The concept of proper government was incomplete without Binding Theory. 'Proper governors can be either θ-governors or antecedent-governors. Because in subject positions traces were never θ-governed, their only hope was to find a local antecedent (Dikken & Lahne, 2013, p. 669). This could be verified by that-trace effect proposed by Chomsky and Lasnik (1977) who explained the grammaticality of *'Who$_i$ do you think that John invited t_i?'* and ungrammaticality of *'Who$_i$ do you think (*that) t_i invited Mary?'* in terms of the presence of the Complementiser '*that'* which was not there to intervene in the proper government relationship between the object and its governor (the verb) in the former construction allowing the object to move freely, but this complementiser, if present, would not allow to move the subject freely just because it would intervene the antecedent-government relationship between the trace of subject and its antecedent. This

was the reason why objects were easy to extract from their positions as compared to the subjects. However, there were structures where subjects could move easily as compared to objects. These structures showed superiority effect (Chomsky, 1973) which was apparently opposite to that-trace effect. Superiority effect could be seen in English multiple wh-questions: the questions with more than one wh-elements. For example, the construction *'Who$_i$ t$_i$ ate what?'* demonstrated that the subject shown structural superiority over object by moving and leaving the object unmoved. The rationale for this superiority lay in the fact that if object moved along the subject as in *'*'Who$_i$ what$_j$ t$_i$ ate t$_j$?'*, it would lead to a structure where subject would not be governed by its antecedent. However, it was assumed that the unmoved wh-element moved covertly in the sentence. This phenomenon could be compared with the wh-*in-situ* languages- Chinese and Japanese where wh-movement did not surface and it was assumed to take place covertly. Based on this fact Huang (1982a&b) proposed that wh-movement could occur before or after S-structure. If it occurred after S-Structure in the case of English multiple wh-questions and all type of wh-like movements in wh-in situ languages, the question would arise that at which level of representation these covert wh-movements should be represented. It demanded that there should be some level beyond D-structure and S-structure where such phenomenon can be represented.

It was important to review some other structural phenomena which endorsed a need for some extra level of representation beyond SS before coming to the stipulation of that level. One such phenomenon was *scope* which was discussed by May (1985) within the GB tradition. According to his approach "every quantified phrase must properly bind a variable……. and mutually c-commanding quantifiers can take scope in either order" (Dayal, 2013, p. 829). There were structures with quantifiers which might be interpreted in multiple ways. For instance, the following structures in (17) may be studied.

(17)

a. *Some student attended every course*.

b. *Some student said that Mary attended every course.*

In (17) sentence (b) was straightforward that Mary attended all the courses, but structure (a) was ambiguous in that it might lead to two possible interpretations. First that it described a situation where there was one student who attended all the courses (The wide scope has been applied to *some student* in this interpretation). Secondly, it described that no course was empty of students (with wide scope on *every student*) (Hornstein et al., 2005, p. 265). This ambiguity of scope phenomenon was not syntactically realized in English at SS. However, there were languages like Hungarian where it was realized syntactically (Cook & Newson, 2007, p. 179). Furthermore, as scope should have fulfilled the requirements of Binding Theory it must have been realized at some level of representation. The inability of SS level to represent such phenomenon demanded that there should be some extra level of representation where such structures could be described adequately.

At which of the two levels of representation (i.e., D-structure or S-structure) should the Binding Theory be applied. As Binding Theory had an effect on movement, it should be applied at SS level. However, there were structures like (18) which made this assumption problematic.

(18) [Which thing of himself $_i$] $_j$did Jack$_i$ break t$_j$?

In (18), the antecedent of anaphor *himself* is the subject *Jack*. At SS level formed after movement of wh-phrase the anaphor did not appear to hold binding relation with its antecedent, and appeared to violate Binding Principle A: an anaphor must be bound in its domain. It was also not c-commanded by the subject. It did not violate Binding principle because it was easy to notice that at DS level, before movement, both the conditions were fulfilled as the trace of the moved element showed that before formation of SS the anaphor was bound in its own domain and its antecedent c-commanded it. In this case Binding Theory seemed to take place at DS level. However, this was not true for all the cases. There were structures like (19) where Binding Theory seemed to hold after movement.

(19) Jack$_i$ believes [himself$_i$ to have been saved t$_i$]

The structure (19) observed binding principle (A) after the movement of the anaphor from the object of the non-finite clause to the subject position. At its DS position, the antecedent *Jack* could not bind it; hence, it was not bound in its domain. This discrepancy urged for some new level of representation to be introduced where Binding Theory might be applied as it was not ready to be applied strictly at one of the two syntax internal levels: DS and SS.

In order to cope with the demand of some level of representation, beyond D and S-structures, which could accommodate information left by the two previous levels, Chomsky proposed the following.

> It has, however, become clear that other features of semantic interpretation having to do with anaphora, scope and the like are represented not at the level of D-structure but rather at some level closer to surface structure, perhaps S-structure or a level of representation derived directly from it - a level sometimes called LF to suggest logical form. (Chomsky, 1986a, p. 67)

In addition to LF level, one extra level was needed where Phonetic information could be sent from the S-structure level. This level was PF (Phonetic Form) where the phonetic information was sent from the S-structure level. To sum up the whole process of representation in GB model, the derivation started from D-structure level- the phrase marker which was produced as an output of phrase structure rules and lexical insertion. The theta-roles or thematic roles were assigned at this level under theta theory i.e., it represented one to one correspondence between grammatical function and theta roles. This level further provided input to transformation operations which led to the next level, that was, S-structure i.e., the phrase marker where many significant modules of grammar were applied. At this level case theory, Binding Theory (partially), some aspects of ECP, and subjacency were applied. From S-structure level, derivation further split into two levels i.e., PF and LF. One copy of derivation was sent to PF for phonetic interpretation while the other was sent to LF for semantic interpretation (Hornstein et al., 2005, pp. 19-20).

A critical evaluation of GB Theory revealed that it could not be denied a status of significant development as it was the first version of P&P theory and in a way a considerable attempt for the formulation of a comprehensive theory of UG. However, it had problems to achieve the status of a real theory of a natural science of language particularly if seen according to Chomsky's (1964) three levels of adequacies and Mcgilvray's (2017) seven conditions for natural science. If it were assumed that its different modules were needed to render grammatical structures, it would be very difficult to assume that a child at an age of 2 to 3 years could rely on so many modules of grammar to produce grammatically true sentences. His/her intuitions/ knowledge of language may not be so complex that he could utilize a different module of grammar for case assignment of his/her NP's and a different module to assign theta roles to arguments in his/her small and simple sentences. The faculty of mind enabling him/her to acquire languages could not be so complex to consist of a number of separate modules and the overall mechanism of grammar could not consist of 4 levels of representation. In light of *simplicity*, *universality*, *efficiency of design*, and *descriptive* and *explanatory* adequacy, the GB could still be considered a step towards achieving all these instead of a destination where all these virtues of a natural science of language had been achieved. The urge to move forward to achieve a simpler, optimally more efficient, and descriptively and explanatorily more adequate theory of UG urged elimination of SS and DS as levels of representation and different modules of grammar as extra stipulation on basic grammatical mechanism in favor of a minimalist framework of linguistic description.

2.6 Minimalist Program

Minimalist program (MP), the current version of the UG research, aimed that faculty of language FL must fulfill the requirements of the external systems which interface with the FL in an optimal way and that the content of UG must be computationally an efficient design. Since the beginning of this program in early 1990s, it was assumed that Language consisted of a lexicon and a computational system. The latter was embedded into two performance systems: articulatory-perceptory (AP) and conceptual-intentional (C-I). There were two linguistic levels of representation which

interfaced with the performance systems. Phonological form (PF) and Logical form (LF) interfaced with articulatory-perceptory and conceptual-intentional systems respectively. The computational system created a linguistic expression which is a pair of representation at PF and LF. A construction would converge if its structural description contained legitimate PF and LF objects at interface levels and would crash if it failed to obtain such objects. However, it was not sufficient as the operations that created linguistic expressions must meet some other considerations of an efficient and simple design to be optimal in true sense. These considerations imposed restrictions on superfluous steps in derivation (economy of derivation) and superfluous symbols in representation (economy of representation). Thus, the movement operations should prefer shorter steps over the longer ones and no symbol should be without interpretation. In this way MP attempted to achieve simplicity and non-redundant explanation (Boskovic´, 2013, pp. 97-98).

Chomsky did not hit upon the idea of economy all of a sudden with the inception of MP in his seminal works (Chomsky 1993, 1995b), rather its seed could be traced back in principle of full interpretation: Every element in a sentence must be interpretable- which further led to the idea of economy of representation: "There can be no superfluous symbols in representations. This is the intuitive content of the notion of Full Interpretation" (Chomsky, 1986a, p. 151).The principle of full interpretation was originally proposed to have a better explanation of a principle like theta-criterion which entailed that theta roles and arguments should be in one to one correspondence to each other. There could neither be extra theta roles nor extra arguments in a sentence. For instance, the two structures in (1) can be presented in this regard.

(1)

a. **Jack loves Jill Mary (Jill and Mary two different arguments)*

b. **Jack loves*

The ungrammaticality of (1a) is due to the presence of un-interpretable arguments and that of (1b) is due to the presence of an extra theta role.

The concept of economy was not restricted to representation of symbols only. Another aspect of economy, economy of derivation, stressed that no superfluous steps should be adopted for reaching a derivation. The development in UG during 80's and early 90's led to the economy of derivation as a guiding principle for all derivations in syntax. This could be seen in the observations about verb, inflection and auxiliary movement in English. Main verbs in English were not observed to move out of VP's unlike auxiliaries which could undergo such movement. This is evident in two derivations in (2) below.

(2)

a. He speedily removed the parcel.

b. He had speedily removed the parcel.

In (2a) the main verb *remove* can't move out of the VP while in (2b) the auxiliary had can undergo movement.

It was assumed that in case of main verbs inflections underwent a lowering movement to attach to main verbs while auxiliary were assumed to rise to inflection to attach with it. Pollock (1989) provided a rationale for this mechanism by suggesting that main verbs did not undergo raising to inflections as they could not assign theta-role from there. The auxiliary had no such constraints to ban their raising to inflections. Thus, to avoid violation of theta criterion the main verbs avoided rising to inflections. Nevertheless, a problem still remained to be solved. A lowering movement of inflection to attach to verb would cause a violation of ECP as the trace left behind would be ungoverned being in a higher position. For this reason, Chomsky (1991a) considered that this lowering movement was impossible. To meet the requirement of ECP at LF level, he suggested that along with the overt lowering of the inflection to the main verb, there should be a covert raising of the main verb to the inflection position. Now the economy of derivation demanded that shorter steps should be preferred to longer movement, so it was assumed that initially shorter raising movement would occur obligatorily (i.e., overt raising of auxiliary or covert raising of main verb). The longer movement would

accompany it if it was forced by certain requirement as lowering of inflection to the main verb.

Unlike GB where move α was the only principle for movement and only violation of a constraint imposed by some other principle of grammar would be banned, MP would allow any process as a last resort. Some processes bore more cost than the others. The latter were preferred over the former. An example of this was Chomsky's (1993) proposal that *do*- insertion should come as a last resort when movement of verb or inflection became impossible. Movement of V or I was cheaper as compared to *do*- insertion, so dummy auxiliary couldn't be introduced until movement was possible. Same was true for movement; that was, an element could move as a last resort. This can be observed in (3) below.

(3)

a. John is certain t to come.
b. * John is certain t will come.

The NP *John* could move in (3a) as it had a formal inadequacy that it could not be case licensed in its position *(t)* before movement. However, in (3b) the same NP had no such formal inadequacy, so there was no compulsion for movement as a last resort.

If a formal inadequacy in an element could induce movement as a last resort operation, studies were divided on whether these inadequacies were present in the moving element or in the target where the elements had to move. Chomsky (1993) adopted that it lay in the moving element. This was revived by Bosˇkovic´ (2007) based on successive-cyclic movement. Under this approach an element X could move if it had a formal inadequacy which could be rectified by movement. On the other hand, Chomsky (1995b) proposed that the formal inadequacy in target motivated the movement. Lasnik (1995) tried to join both the approaches under Last resort.

(4) John is certain t to come.

Analyzing (4) with respect to both the approaches the *moving element* approach would suggest that *John* moved because it lacked case licensing in the initial position

while the *target driven* approach would suggest that *John* moved the target position which lacked an element to fulfill EPP feature requirement. Chomsky (2000b) posited the activation condition according to which X could move if it had an un-interpretable feature. This seemed near to moving element-oriented approach. Target driven approach had equal advantages as the requirement for movement was satisfied as soon as the element entered into the target position. However, Bosˇkovic´(2011) mentioned that there were cases where movement was not motivated by the target (e.g., the movement of quantifier under quantifier raising was not motivated by the fact that the target position required a quantifier to adjoined to it).

Before going into further detail to review the concept of movement under MP, It was important to dwell a little upon some basic Minimalist concepts and basic language design in the program. According to the requirements of efficient design the language design consisted of lexicon, a computation system and only two levels of representation (i.e., PF and LF) which were required to satisfy the *bare output conditions* imposed by the other systems (i.e., SM and C-I) which interfaced with language. Thus, starting with a set of selected lexical items the computational system, by an operational procedure, was assumed to create a set of representation for LF and PF levels. A derivation would converge if valid PF and LF objects were formed. Chomsky called this operation merge.

> Clearly, then, C_{HL} [the computational system of the human language faculty] must include a ... procedure that combines syntactic objects already formed.... The simplest such operation takes a pair of syntactic objects (SO_i' SO_j) and replaces them by a new combined syntactic object SOij. Call this operation Merge (Chomsky, 1995b, p. 226).

Chomsky (2007, 2008) continued to hold the earlier definition of merge: “An operation that takes n syntactic objects [SOs] already formed, and constructs from them a new SO” (Chomsky, 2008, p. 137). He further defined the properties of Merge according to principles of efficient computation. One such principle was binarity: n=2 which could be found in Chomsky’s (2000b) Minimal Search and Kayne’s (1994) Linear Correspondence Axiom (LCA). Another principle was No Tampering condition (NTC):

"Merge of X and Y leaves the two SOs unchanged" (Chomsky, 2008, p. 138). It suggests that merge would leave X and Y unaltered by placing them in a new set SO={X, Y} causing syntactic extension instead of syntactic infixation (e.g., embedding X into Y). Another principle was *inclusiveness condition*: "no new objects are added in the course of computation apart from rearrangements of lexical properties" (Chomsky, 1995b, p. 228). It implied that merge did not include traces, bar levels, indices etc. during a derivation (Epstein et al., 2013, p. 510).

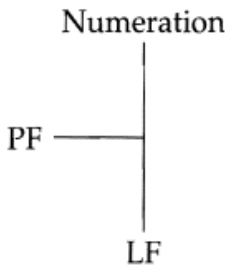
It was important to note that the computational system, which applied Merge to reach new syntactic objects, did not have direct access to all the lexical items of the language throughout the derivation, rather it had access to a selection of items called numeration *n* that was the starting point of derivation. Chomsky (1995b, p. 225) introduced the concept of numeration in order to determine independent selection of a single lexical item in a computation. It could be represented as a set of pair (L, i) where L represented lexical item and *i* represented the number of times L was selected. Why there was a need to start off with a numeration of selected lexical items? There was in fact an empirical need behind it which Chomsky clarifies by proposing an analogy: "Suppose automobiles lacked fuel storage, so that each one had to carry along a petroleum processing plant. That would add only bounded complexity, but would be considered rather poor design". In case the computational process has all the lexicon items to access to throughout the derivation, then it "must not carry along this huge beast, rather like cars that have to replenish fuel supply constantly" (Chomsky, 2000, pp. 12-13). Thus, to avoid the burden of the whole lexicon, the computational system was provided with a set of lexical items.

Starting off the derivation with selected lexical items, the computational system created a linguistic expression which was a pair of representation at PF and LF. The question aroused from where to split two expressions. In the language design proposed by GB theory the SS level was the point of split from where PF component was sent to one way and the LF component was sent to the other way. In MP, however, the syntax internal levels, SS and DS, were eliminated; there should be some point of split to separate the ways of the two surviving levels: PF and LF. According to Chomsky (1993)

there was a single point, known as spell-out, where the two components were separated. Under this single spell out approach there was a fear that the point of split could be taken as just another form of SS. As both SS and spell- out possessed apparently same positions, but it could be no more than a misconception as SS was a distinct level of representation while spell-out was not. This model could be represented in figure 11.

Figure 11

The Levels of Representation According to Chomsky (1993, 1995b)



After the reduction of syntactic derivations to a single and very simple operation Merge, the significant issue was to determine the status of traditional X-bar theory in MP which put a ban on creationism in syntax. In order to achieve a mechanism that would restrict computational procedure to add new objects to syntactic description, Chomsky (1995a) introduced *bare phrase structure* model which reexamined traditional phrase structure (X-bar theory). This simplified minimalist mechanism was based on *inclusiveness condition*. The X-bar theory was not inclusive as it added objects during the process of structure building (i.e., N, NP, N′ etc.) The comparison of X-bar theory and *bare phrase structure* could be represented in figures 12 and 13 as mentioned by Boskovic (2013, p. 108).

Figure 12

The Projection Model before Bare Phrase Structure

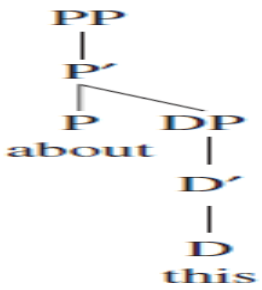
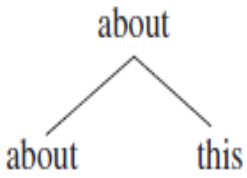


Figure 13

The Projection Model in Bare Phrase Structure



A comparison of the figures in 12 and 13 yielded that the former violated inclusiveness condition while the latter, which is based on bare phrase structure, observed the condition.

A comparison of minimalist *bare phrase structure* and traditional X-bar model rendered that all useful assumptions of the latter were in-built in the former, but the minimalist approach abandoned to accept the traditional X-bar schemata as an independent module of grammar. X-bar theory had problems which were attempted to resolve in the Minimalist framework. The binary branching condition (Kayne, 1984, 1994) was not intrinsic in X-bar theory where unary branching was also allowed. It was imposed as an independent condition that structures could be at maximum binary branched. This condition was not in line with the minimalist operation Merge. Furthermore, the number of projection levels was also revisited in the new approach.

Bare output conditions made the concepts “minimal and maximal projections” available to C_{HL} [the human linguistic computational system]. But C_{HL} should be able to access no other projections' (Chomsky, 1995b, p. 242). The minimal projection was one which was not projected, and maximal projection was one which did not project further. Chomsky followed Muysken (1983) in defining these notions in a relational context. In traditional X-bar theory, it was not stipulated as a condition that there should be only two projection levels (bar levels i.e., XP=X).What should then be the status of intermediate projection X′ in the new system? These were now considered inert elements which had no role to play in the grammatical processes.

> From a representational point of view, there is something odd about a category that is present but invisible; but from a derivational perspective, ... the result is quite natural, these objects being "fossils" that were maximal (hence visible) at an earlier stage of derivation. (Chomsky, 1995a, p. 435)

Now intermediate projection had a representational visibility which did not render it any significance in derivation.

How the structural relations-spec-head and head-complement could be adjusted in the new system was also an important issue. Chomsky viewed that head forms the most local relationship with the complement. All other relations (except adjunct) were spec-head relations. It implied that first merger of head would give a head-complement structure while all additional mergers would yield spec-head relation. The introduction of multiple specs was a very significant contribution of bare phrase structure (Bosˇkovic´, 2013, p. 110) which solved many problems about syntactic computations. One instance of this phenomenon could be found in Koizumi’s (1994) analysis of multiple wh-fronting in Romanian where each wh-phrase was assumed to fill a separate Spec-CP position. In Romanian all wh-phrases moved to the front (e.g., a. *Cine ce precede? (Who what precedes?)* and b. **Cine precede ce? (Who precedes what?)*). The structure (b) was ungrammatical as wh-phrase did not front like structure (a) which was a requirement of the language.

Regarding the position of Adjuncts in the minimalist framework, different approaches might be adopted. One possibility was to extend multiple specifier approach to adjuncts by allowing merging multiple phrases within one phrase. However, owing to the difference in characteristics of adjuncts and arguments with respect to case and agreement features, this approach could not be very promising. To cope with a big problem of adjusting idiosyncratic adjuncts within the structural framework where other constituents were happy to sit in their assigned places some researchers adopted the acyclic approach. In MP, derivation was assumed to start from the most deeply embedded clause and to proceed cyclically bottom up. Different elements (i.e., head, complements, and specifiers) would merge with each other according to the stipulated *bare output* conditions. Lebeaux (1988) maintained that the elements which entered the structure by adjunction could be exempted from requirement of cyclic derivation. Stepanov (2001) assumed a rather strict position in this regard by postulating that it was not a possibility but adjuncts must be adjoined acyclically into the structure. Both Lebeaux and Stepanov mentioned the cases where adjuncts were inserted into the structure acyclically after wh-movement.

The late insertion of adjunct raised a new question: could a lexical item be inserted after spell-out at PF or LF? In GB framework all the lexical insertion was considered to take place before SS. Chomsky (1995b) suggested a way of deducing ban on late insertion at PF and LF levels. The reason of a restriction on late insertion lay in Full-interpretation. If a lexical item was inserted at PF, it would not be interpretable at LF and vice versa. However, there were certain conditions where insertion at PF and LF levels could be allowed; that was, the phonologically null elements might be inserted at LF and semantically null elements might be inserted at PF. An example of latter case was the PF level insertion of dummy auxiliary *do* which was semantically inert. An instance of the former case could be found in Boskovic's (1998) study of French in which *wh-in-situ* could be possible in case of LF insertion of a phonologically null interrogative element C as evident in the grammaticality of (a) and ungrammaticality of (b) in the following structures: a. *Tu as vu qui? (You have seen whom?)* b.**Que tu as vu qui?* Structure (a) fulfilled the requirement of late insertion at LF, so it was obtained

grammatical; On the other hand, (b) failed to meet this requirement and was considered ungrammatical.

Another clan of scholars proposed that Adjuncts are specifiers to their respective functional heads. Cinque (1994) proposed that adjectives are specifiers to the nouns always assuming a pronominal position. The postposition of adjectives in certain languages is obtained by leftward movement of heads. Alexiadou (2013) illustrates the phenomenon by comparing English pronominal adjective with French postnominal adjectives. Lamarche (1991), Bouchard (2002) counter the phenomenon of head movement of noun. Alexiadou (2013) viewed that linear order should not be determined at syntax rather there should be some semantic/cognitive motivation behind it. A similar position was adopted by Sproat and Shih (1987, 1991). For adverbs, as adjuncts, Cinque (1999), Alexiadou (1997) and Laenzlinger (1998) support syntactic approach to linear order. Cinque (1999) provides typology of adverbs, in the analysis of multiple adverb structures, wherein different adverbs attain different positions with respect to functional heads and the set of functional projections may be licensed either by the head or via the adverb at the Spec positions. In this way the spec-head agreement is obtained. As current minimalism does not allow any sort of Agree relation between specifier and head, Cinque's proposals of Spec-head agreement and the role of spec in determining the projection are problematic.

Chomsky (2001b), showing his dissatisfaction with how the matter of adjuncts had been handled with, did not adopt the position that adjuncts might be introduced into the structure late in the derivation. He viewed that adjuncts were not added to the structure by usual set merge at all, rather these elements were added by a replacement operation which replaced the element (with which adjunct had to be adjoined to) with a pair sort of merge which included the adjunct and the element itself. If adjunct was to be adjoined to an element XP, the XP would be replaced by a pair <adj, XP>. This replacement would leave the syntactic process unaffected and the relationship of XP with other elements would remain the same. In this way adjunct would be syntactically invisible. However, it would be available for phonological and semantic interpretation at PF and LF levels respectively. A question might arise that how to represent the

replacement operation on tree diagram. The syntactic derivation could not be represented in the form of a tree diagram only. In post-2000 works, Chomsky has introduced the method of representing the same structures in set configurations. Thus, the merger of two elements (i.e., *the* and *boy*) would be represented in the form of sets as: {the, {the, boy}}. One element *the* has been selected as a label which showed that the phrase formed by the merger of two elements was a determiner phrase DP headed by a determiner *the*.

In MP, the mechanism of computational procedure was reduced to a single simplified operation Merge. Then, what about movement? Chomsky proposed two types of merge: Merge of α, β is unconstrained, therefore it may be either external or internal. Under external Merge α and β are separate objects; under internal Merge, one is part of the other, and Merge yields the property of displacement (Chomsky, 2001b, p. 8). The Internal Merge was in fact movement. As compared to GB, MP considered movement as a type of merge where one element, already part of the structure, would merge to another position. Not only the basic definition, but the whole mechanism of movement was reformulated in the MP.

What motivated an element to undergo internal merge (for the sake of convenience the term *movement* would be used). This could be explained by checking theory: a reformulation of the traditional interpretation of structural case and agreement phenomena. In traditional GB framework it was assumed that certain functional categories T or I possessed some agreement or case features which they assigned (passes over) to a lexical head V or N. Chomsky (1993) suggested a minimalist alternative to the feature assigning approach by proposing checking theory which was based on feature checking: A lexical head V or N was assumed to enter into the derivation with all its morphological features that might be checked against some functional categories. According to this approach, the lexical entities were not assigned the case or agreement features by the syntax rather they intrinsically possessed these features which they brought with them at the time of their entry as lexical items. In order to get these features checked off, a lexical category α would move to a functional category β. Why did α need to move to check β to accomplish checking? In fact, the features of α were un-interpretable at LF. Full Interpretation (FI) required that all the elements should be

interpretable at the interface levels, otherwise the derivation would crash. To meet the requirement of interpretation at LF, the un-interpretable features of α must be eliminated before reaching LF. This could be achieved by moving α to β which possessed interpretable features. "Un-interpretable features are eliminated when they satisfy certain structural conditions: an un-interpretable feature of α must be in an appropriate relation to interpretable features of some β" (Chomsky, 200lb, p. 11).

Epstein et al. (2013, p. 502) analyzed the case and agreement checking in "He eats cheese". According to checking theory the head of the DP/NP *he* contained case features at the time of its entry into derivation represented as he [nom]; in a similar manner, the V *eats* was fully inflected as eats[Agrs, Tns] having agreement and tense features. In order to converge at LF, the case, agreement, and tense features of the lexical heads should have been checked against some inflectional categories. First considering the feature checking of *eats,* this category would raise to Agrs to check its agreement features. If the un-interpretable agreement features of *eat* were identical with the interpretable features of Agrs, the un-interpretable features would be eliminated and the derivation would converge at LF. Now un-interpretable [– , Tns] features of Agrs+eats complex were left to be checked. To check the tense features, this complex would raise to T where the un-interpretable tense features would be eliminated. Hence, the derivation would converge at LF with no un-interpretable features. As overt V-raising is barred on standard assumptions in English, according to Chomsky (1993) this would be a covert raising occurred just for legibility at LF level. However, Chomsky (1995b) accommodates this covert movement and bar on over V-raising on stronger foundations of Procrastinate (i.e., a principle which entails economy of derivation): an operation should occur only when it is necessary, not prematurely. Hence, the possibility of covert movement prohibits the overt V-raising in English. The un-interpretable case features of the DP/NP *he* would be checked by raising it to the spec-T position where nominative case checking features [nom] could be checked off. Checking theory reformulated the case and agreement phenomenon. In GB case was assigned under case theory: an independent module of grammar that had to apply at SS level. This, like other relations (e.g., theta roles), had to be assigned under the central grammatical relation: *government*. The case assigning procedure was complex and diverse in that procedure: nominative was

assigned to Spec-TP, while accusative was assigned from a head to its complement, or in the instance of ECM, to the specifier of a head's complement. With an urge to eliminate the complex and extra internal interface levels (i.e., DS and SS) and extra relations like government, in minimalist program all these cases of structural cases were to be checked (instead of assigned) under simple X-bar theoretic terms under spec-head relation. Agreement was also checked under the same relation (i.e., spec-head).

A review of checking theory was not enough to encapsulate the reformulation of the concept of movement in Minimalist Program. The phenomenon of movement also observed Inclusiveness condition. For this purpose, Chomsky (1993) had to abandon trace theory in favor of copy theory which suggested that movement was the merge of a copy of some element, already present in the structure, with the structure itself. The source copy left behind (i.e., a trace in traditional GB sense) was deleted at PF but remained available at LF for interpretation of semantic content. The difference between a trace and a copy was that trace was an empty category with no internal structure while a copy had same internal structure as its source. Cook and Newson (2007, p. 284) provided evidence of how trace theory was problematic by analyzing the syntactic structure in (5).

(5) [Which picture of himself $_j$]$_i$ did John display t $_i$?

A strange fact was that this structure was grammatical even though the reflexive pronoun *himself* was not c-commanded by its antecedent *John.* As a solution to this problem, it was assumed that only wh-determiner *which* was necessary to move to satisfy the scope requirement. The rest of the DP *picture of himself* which moved with the DP by the process of pied-piping could be reconstructed in its original position at LF (i.e.,[Which t $_i$] did John $_j$ display [picture of himself $_j$] $_i$?)A problem still persisted that how to explain the ungoverned trace with *wh-phrase* left behind after reconstruction of *picture of himself* in its original position at LF. Copy theory of movement provided a solution to this problem by assuming that after the movement in the structure: [Which picture of himself $_j$] did John$_j$ display [~~Which picture of himself $_j$~~]?, the source copy ~~'Which picture of himself'~~was deleted at PF but not at LF for keeping semantic interpretation straight which needed that *himself* should be bound by the antecedent *john.*

In the analysis of relatively complex structures in English and the other languages with different parametric settings, the question aroused which copy should be deleted. As keeping in with locality conditions, an element might pass through a chain before internally merging (i.e., moving) into its final destination. Now the problem was which copy of the chain should be deleted at PF and which should be deleted at LF. The structures (6) and (7) can be studied in this regard.

(6) Joe wondered [$_{CP}$ [which picture of himself] $_{k}$ [$_{IP}$ Jim bought [~~which picture of himself~~]$_{k}$]]

(7) Joe wondered [$_{CP}$ [which ~~picture of himself~~] $_{k}$ [$_{IP}$ Jim bought ~~which~~ picture of himself] $_{k}$]]

According to Chomsky (1993) in (6) *himself* underwent LF anaphor movement from the head of the *wh- chain* into the matrix clause. In this case the deletion of head of the *wh-chain* was not permitted to avoid the blocking of anaphor movement chain. Contrastively, in (7) *himself* moved at LF into the lower clause which allowed the deletion of the head of *wh-chain.* It led to the assumption that at LF there were different possibilities of deletion. What about the deletion at PF interface level? The earlier approach was to assume that only lower copies might be deleted at PF level as in: [[the student] ^{k} was arrested [~~the student~~] ^{k}]. However, it was later acknowledged that lower copy may be pronounced in certain situations. Franks (1998) maintained that the lower copies of a chain were deleted if it were to be pronounced at the head position, but if, in some cases, this way of pronunciation caused a PF violation, it would lead to the deletion of the head of the chain and pronunciation of the lower copy. There were other studies like Nunes (2004) which provided good empirical evidence in support of Frank's assumption.

Before moving on to settle the problem of covert movement, it was important to consider how overt movement was reformulated in MP. In GB the motivation for overt A-movement was placed in case theory (i.e., to satisfy the case filter requirement a subject would move to Spec IP where it could be assigned case by the functional head I or T). However, the subject movement could also be defined as requirement of IP to have

a DP at its Specifier position according to EPP. Thus, an IP having EPP features would attract the elements containing the same features to check them off in minimalist terms. Chomsky (2001b) generalized this principle to apply to all overt movements (i.e., a category would overtly move to the specifier position of the category which possessed an EPP feature). In English not only I but C was also assumed to possess EPP features which attract the wh-elements to move overtly to Spec-C positions. This could be seen in the grammaticality of (a) and ungrammaticality of (b) in (8).

(8)

a. Jack seems [~~Jack~~ to be ill]

b. *Jack seems [~~Jack~~ is ill]

In structure (8a), Jack moved out of the VP to satisfy EPP requirement. It was still active as some of its features were unchecked (i.e., case features), so it could still move to the spec-I position to satisfy the EPP features of the finite I. Unlike this in (8b) jack could not move after its movement to spec-I position of the embedded clause where all its EPP and case features were satisfied; therefore, the movement resulted in an ungrammatical structure.

The economy of derivation required that an element with EPP features would select the nearest element to move to it to satisfy the unchecked features. This was evident in case of movement of subject to Spec-I position. As soon as Inflection was added to a structure, its EPP features would attract the subject which was the nearest possible element. In case of passive voice, the object would be the nearest possible element to move to that position. How could the long-distance movement be explained then? The distance was covered in short steps moving an element to the first nearest relevant position then to the second and so on. This was evident in McCloskey's (2000) analysis of Irish wh-movement motivated by EPP feature of C in the structure "an t-ainm a hinnseadh duinn a bhi ar an ait"(the name C +wh was-told to-us C+wh was on the place: the name that we were told was on the place). The wh-element passed through a chain of spec-positions of C which all agreed with the moving element as manifested in the different special forms assumed by the moving element at different spec-C positions. If

all the C positions owned EPP features than what made an element to move further after first step where the EPP features were checked. In fact, the lower C was declarative which could check the EPP features but not the interrogative features which could only be checked at the final C which was an interrogative complementiser. Owing to the fact that the wh-element was left with wh-features unchecked, it remained active and kept on moving until all its features were checked at the final destination the Spec of final C where all its features were checked.

Boskovic (2013) explained the requirement of economy of derivation that movement should be shortest in terms of superiority effect (Chomsky, 1973) which entails that if X and Y were competitors for movement where X asymmetrically c-commanded Y then X instead of Y would move. Boskovic studied Bulgarian wh-fronting to verify the economy requirement. In the structures: a. *Koj kogo e vidjal?* (Who saw whom?), and b. *Kogo kakvo e pital Ivan*? (Whom what is asked Ivan), the wh-elements which were higher according to superiority effect moved to the front first. In structure (a) the subject and in (b) the indirect object moved to the front. Sentence (b) better explained the fulfillment of economy of requirement as it involved multiple wh-fronting. The wh-element in superior (near in terms of locality) position was indirect object *whom* which was higher in position. The wh-element in relatively inferior position was the direct object *what*. The indirect object moved to the higher position followed by the direct object to move and adjoin to it later.

What should be the direction of movement, downward or upward? In GB theory, the reason of upward movement was present in ECP. If downward movements had been allowed there, it would have caused a violation of ECP as the trace of a moving element would be in a higher position remaining ungoverned there. Therefore, GB had to build a mechanism where all movements were upward. However, MP had no place for ECP as a separate stipulation over computation system. It must have a simplified explanation for upward movement. The No Temper Condition (NTC) explained how a downward movement was banned in MP framework. NTC suggested that when a structure was built, its internal structure couldn't be tempered with. If an element moved out of a structure, the internal arrangement of the structure would remain unchanged. In the movement

operation one copy of the moving element would merge to the next position while the source copy would be deleted at PF. Hence, NTC required that all the copied elements should be merged at the top of the other structures which were built by merge, external or internal. If two elements had to merge at the top position then movement should have always been upward.

The NTC raised questions about earlier minimalist account of covert movement. In GB, the distinction between overt and covert movement was that the former was assumed to take place before SS while the latter after SS. In the early minimalist account, overt movement was assumed to take place before Spell-out while the covert movement was assumed to take place after Spell-out. There appeared a similarity between the two models. However, the difference was that in minimalist framework a certain category was a bundle of features which moved to a relevant position of the structure to get the features eliminated by checking them off against a category with interpretable features. Chomsky (1993) proposed that covert movement was preferable to overt movement because of procrastinate: a principle imposing that a process should be applied as late as possible. The late application of covert movement made it preferable to overt movement. There were other arguments in favor of covert movement. As the overt movement occurred before Spell-out, it moved the whole category. At Spell-Out the phonological features were sent to PF and the semantic features were sent to LF, so the post Spell-out movement would involve the movement of certain features which needed to be checked off. In this way, covert movement, which had to bear the burden of some features, was more economical as compared to the overt movement of the whole categories. However, the post Spell-Out covert movement appeared to violate NTC. To validate this claim, Cook and Newson (2007) presented the instance of the covert movement of object in a structure. The uninterruptable case features at LF which should be eliminated by checking them off against some functional categories for the derivation to converge. The un-interpretable nominative case features of subjects are checked off by moving to Spec-CP position. In the same vein, the un-interpretable accusative case features of object should be checked off by moving to Specifier of light verb position: Spec *v*. Keeping in with NTC, the object should have moved to spec-*v* position before IP and CP were added at the top of the structure at the point when *v*P was built. However, as the object

movement was covert which should have taken place after Spell-out, the object moved to spec-*v*P after IP and CP were added to the structure resulting in a violation of NTC. The only reason which appeared to cause the whole problem for covert movement was its occurrence after a single Spell-Out point.

Solving the problem of covert movement which was assumed to occur after single spell-out point, the researchers like Uriagereka (1999), Epstein (1999) and Chomsky (2000, 2001a) set off to search for the possibility of a computation model with multiple spell-outs. This model might be compatible with the derivational nature of computation and interfaces could be able to access the syntactic computation without waiting to reach at final PF and LF levels. The central role had to be played by syntactic computation. The conceptual benefit lay in that as compared to single spell-out model where first the syntactic derivation had to complete to represent the semantic component at LF level, and then semantic composition had to follow to retrace the steps of syntactic derivation, in a multiple spell-out model the semantic composition could occur concurrently with the syntactic structure formation. Epstein et al. (1998) question that how could legibility of a syntactic operation at an intermediate level be checked if it had to be checked at final interface levels. Thus, for checking legitimacy of intermediate syntactic operations the interfaces must have the access to them at multiple levels.

Chomsky (2000, 2001a) captured the phenomenon of multiple spell-out by proposing that there were certain points in derivation called phases where a part of the overall construction became fixed in a way that it did not allow an element to move out of it. The moment a derivation reached a certain *phase*, it would not wait the whole derivation to complete to spell-out from a single point. Instead at relevant points the particular phases would spell out. So, a derivation would complete in *phases* and spell-out might occur at multiple points. In the process, "the computation maps LA [a lexical array = Numeration] to <PHON, SEM> [the pair of representations interpreted phonetically and semantically] piece-by-piece cyclically . . . Call the relevant units phases" (Chomsky, 2001b, p. 4). This model of derivation addressed the problem raised by Epstein et al. (1998) as now after the completion of a part of a structure, it would be sent off to the interface levels: LF and PF. What would constitute a *phase*, or put

differently, what would be a complete *phase*? Chomsky claimed that "ideally, phases should have a natural characterization: they should be semantically and phonologically coherent and independent. At SEM [the semantically relevant representation], *v*P and CP (but not TP) are propositional constructions.... At PHON [the phonologically relevant representation] these categories are relatively isolable" (Chomsky, 2001b, p. 22). CP and *v*P were assumed semantically relevant phases as they were propositional constructions.

The second question, which naturally emerged right after putting forth the phases model, was that how would a long-distance movement be possible if a part of construction were fixed at a certain point form where it could not allow any element to move further. In fact, Chomsky did not claim that the whole phase was sent off for interpretation as soon as it completed, rather a part of the phase would not be sent off until the next phase was added complete. If there was a phase: PH = [α [H β]] where H was the head, and α-H was the edge of PH. The natural condition demanded "that β must be spelled out at PH, but not the edge: that allows for head-raising, raising of Predicate-internal subject to Spec-T, and an 'escape hatch' for successive cyclic movement through the edge" (Chomsky, 2001b, p. 5). In this way at the completion of a phase only complement of a head became fixed while the head at the edge remained free to move for further cyclic movement. The derivation in phases could be illustrated in (9).

(9) Jill may think that Jack will save Joe

To begin with the derivation of (9) (cyclically bottom up) the lower verb *save* will merge with the internal argument *Joe* to form the VP which will merge with the light verb *v* and the external argument *Jack*. At this point in derivation, one phase would be complete. Hence, the complement of this phase: the VP would be fixed and sent off to the interfaces while the edge containing light verb and external argument *Jack* would be free for further cyclic movement. Now the inflection would be added to the structure with its EPP features which would attract the subject to its spec position to check off these un-interpretable features. The subject *Jack* from the edge of the previous phase would move to Spec-I position. To this C would be added to complete the second phase. To move on, derivation would continue to merge the embedded clause as object of the main verb *think*

making the upper VP which would be merged with light verb *v* and external argument of the matrix clause *Joe* completing the third phase (i.e., the upper *v*P). At this stage of derivation, the inflection of the matrix clause *(may)* would be added. The external argument *Joe* would move to specifier position of the inflection to check the EPP features off. At the end the abstract C would merge to complete the final phase of derivation.

For strengthening the argument in favor of poverty of stimulus Rizzi (2017) contrasted the linear and hierarchical constraints on co-reference between noun and pronoun. He considered two sentences *John $_i$ thinks he$_i$ will win the race* and **He$_i$ thinks John$_i$ will win the race* to highlight the fact that the linear order might be a constraint on co-reference entailing that if pronoun linearly preceded a noun the co-reference between the two would not be possible. However, he further provided the following structures where linear order constraint failed to capture the phenomenon: *When he$_i$ wins john$_i$ is happy* and *His father thinks that John can win the race*. Both the structures were grammatical despite of the fact that in both of them pronoun preceded the noun against the linear order constraint. This hierarchical constraint on co-reference, in Rizzi's opinion, could be captured by Lasnik's (1976) proposal: co-reference was impossible when pronoun c-commanded the noun and was possible otherwise. Supporting his argument by quoting the empirical studies of Crain (1991) and Guasti and Chierchia (1999), Rizzi (2017) proposed that if a child was sensitive to hierarchical nature of co-reference, he/she must have some intuitive knowledge which helped him/her in stipulating the correct constraint even if his experience did not provide him with complete instruction regarding this.

The earlier generative theories had language acquisition as a crucial issue. At the time of Extended Standard Theory (EST) (Chomsky, 1970), it was assumed that UG would equip a language learner with the format of rules for grammar of a particular language. The learner would inductively formulate the rules of the grammar of the language he is exposed to on the basis of his experience. "The learner would thus implicitly act as a 'little linguist,' formulating hypotheses within the class of formal options permitted by UG, and testing them on the empirical ground provided by the primary data" (Rizzi, 2017, p. 117). The problem with this model was that it did not

explain the operative procedure how a learner could figure out rules from his experience. This problem of explanatory adequacy was resolved by P&P (Chomsky, 1981a) by providing a model of UG equipped with universal principles common to all languages and parameters variable across languages. The universal properties could be linked to the structure of UG possessed by a language learner while the parametric variation could be connected to the experience of the learner. A learner knew the universal properties of language as an inborn ability while he/she might fix the parameters by virtue of experience he was exposed to. The parametric model was a significant development regarding explanation of a procedure of acquiring a grammatical system. The development of grammar in a child by a process of parametric fixation led many significant studies. Rizzi (2006) and Thornton (2008) provided some corpus-based results while Gervain et al. (2008) conducted experimental research on parametric fixation.

A properly structured UG would meet *explanatory adequacy* by providing a satisfactory answer to the fundamental linguistic question: how an individual acquired a particular language. P&P approach proved a ground breaking beginning towards an explanatorily adequate UG. Passing through two significant phases: GB Model (i.e., from late 1970's to early 1990's) and MP (from 1993 to date), the approach is still helping in modifying the structure of UG to be in accordance with the biology and nature of humans who possessed it. MP in post-2000 research (Chomsky 2004, 2005) did not restrict itself to the goal of achieving explanatory adequacy; rather it set off for a larger enterprise of seeking a further explanation, beyond explanatory adequacy: what should be the structure of UG, the nature and properties of human language faculty. The further explanation would seek to explain how the principles not specific to language but more deeply embedded in world of nature would contribute in structuring language faculty (i.e., I-language). "The biolinguistic approach to generative grammar has in recent years emphasized the relevance of principles that are not specific to the faculty of language. These are taken to work together with both genetic endowment and experience to determine relevant I-languages" (Lohndal & Uriagereka, 2017, p. 123)

To pursue for explanation beyond explanatory adequacy, Chomsky (2005) proposed three factors that contribute to the growth of language in an individual. The three factors were:

1. Genetic endowment

2. Experience.

3 The principles not specific to human language.

As illustrated by Rizzi (2017), the first factor identified the evolutionary events which, rising quite recently in human phylogeny, rendered the neural circuitry that gave human language its unique characteristics among other forms of animal communication. The second factor consisted of the data the language learner was exposed to. This was part of the external world and its historical incidents (i.e., wars, migrations, and socio-cultural stratifications). This factor did not take part directly in the study of cognitive capacity of the learner. The third factor covered the evolutionary development, over a very long course of time, identifying the principles of data analysis which were not specific to humans and language, but might be shared with other forms of animal intelligence. The principle of optimal computation may be found operative in the biological world or even beyond in the natural laws in general. Hence, the further explanation of this factor would answer how the general laws of nature structure human language.

In Chomsky's words: "In principle, then, we can seek a level of explanation deeper than explanatory adequacy, asking not only what the properties of language are but also why they are that way" (Chomsky, 2004, p. 105). To seek for such explanation was not specific to linguistics as Boeckx (2006, pp. 114-115) quoted Steven Weinberg, a physicist, who suggested that: "In all branches of science we try to discover generalizations about nature, and having discovered them we always ask why they are true … Why is nature that way?". The answer to this question was found partly in contingencies and partly in generalizations. So, science takes a direction from this whereby some generalizations are explained by others. The Minimalist Program with respect to its endeavor beyond explanatory adequacy would struggle to probe how general laws/principles of nature were operative in determining the structure of language. Under third factor Chomsky presented many general principles which might be operative in language i.e., principles of structural architecture, developmental constraints and

efficient computation which would "be of particular significance for computational systems such as language" (Chomsky, 2005, p. 6).

The Minimalist endeavor of situating language in the overall scheme of nature by correlating the principles governing language with the general laws of nature was a very ambitious endeavor. The unimaginably vast phenomenon of nature is yet unexplored, what to say about language as a part of natural world. However, studies have begun to explore this unfathomable sea. Lohndal and Uriagereka (2017) maintained that there were two ways of studying third factor. First way was to identify general principles that appeared active across various domains of nature and then to assume them active in a computational system like language. The second way was to select some linguistic units and find them in other animal species (e.g., if principles of human phonology were found in other animals, it would lead to infer that phonological operations were not limited to human language faculty). Samuel (2009, 2011) and Samuel et al. (2017) conducted such studies to trace phonological operations in non-human species (i.e., animals).

There were many researches which explored *third factor* by tracing the general principles of nature in linguistic phenomenon. For instance, Principle of computational efficiency was a general principle in all domains of nature which ensured that all computations must be as efficient as possible. Hence, language should be efficient as a computational system. There were not many studies before Chomsky (2008) considered how cyclicity conditions fulfilled the requirement of efficient computation. This could be glimpsed in Extension condition and NTC. The former condition demanded that as the derivation went on the internal or external merge of a new object would target the top of the tree. If the object X were merged somewhere in between, it would not have been efficient computation. Furthermore, NTC demanded that the merge of two objects X and Y would leave them unchanged. The set {X, Y} built in this way could not be altered and new features could not be added. Chomsky (2008, p. 138) viewed NTC as a natural requirement of efficient computation. Lasnik and Lohndal (2013) viewed that it was more economical to expand a structure than to return back and alter the structure that has already been built. Freidin and Lasnik (2011) argued that interface conditions fall under principle of efficient computation. These conditions were imposed on grammar by other

cognitive components. Particularly, the principle of full interpretation was a constraint imposed on syntax by meaning and sound interfaces banning the representation of any superfluous symbol that might not be interpretable at two interfaces. In a similar way, theta criterion and case filter could be analyzed under this principle (e.g.,**Jack loves Mirium Peter*was not allowed as it contained extra arguments which couldn't be interpreted at the interface levels).

Rizzi's (1990) relativized minimality was another good example of economy as it required that in the configuration ……X…….Z……..Y….. , Y couldn't be related to X if Z, having certain characteristics common with X, intervened between X and Y. Chomsky (1993) proposed *least effort* on the basis of Rizzi's notion. Least effort required that a derivation required the minimum possible steps. These economy requirements worked behind fronting of wh-element as evident in (10).

(10)

a. Guess who bought what?
b. *Guess what who bought?

(10a) is convergent while (10b) is not. The closest wh-element fronted in (10a) traveling the least distance and requiring the least effort in derivation resulting in a convergent derivation. As argued by Fukui (1996) and Uriagereka (1998) the economy conditions were general. The question aroused why and how should distance matter in other realms of nature, and what were the properties of distance. Chomsky's (2000) *phases* model reduced the complexity of computation by proposing that distance was travelled in chunks. During the derivation by computation, as soon as a phase completed it would be sent off to interfaces. This reduced the problem of computational procedure that might involve an element to cover a long distance. Hence, it was more near to an efficient computation as compared to the previous models where an object used to cover the long distance in steps, but the computational procedure was complex as the derivation was sent off to the interfaces at its completion which was not compatible with general procedure of computation. Hence, cyclicity considerations, *full interpretation, relativized minimality,* and *derivation by phase* all aimed to achieve computational efficiency which

was not only required in language as a computational system, but other computational systems also operated by this principle.

A relevant argument for third factor emerged about Fibonacci patterns which different phenomenon of nature were observed to follow. Uriagereka (1998) initiated the argument that Fibonacci patterns could be found in language. What were Fibonacci patterns? Lohndal and Uriagereka (2017, p. 131) defined these patterns as: "Relevant structures manifest themselves either as a number of features falling into the series 0, 1, 1, 2, 3, 5, 8, … or as a logarithmic growth based on the limit of the ratio between successive terms in the Fibonacci series (1.618 …, the so-called golden expression φ)". These growth patterns had been found in the botanical world of plants as well as controlled lab situations. Douady and Couder (1992) conducted such experiment to verify the Fibonacci patterns. They dropped magnetized ferro-fluid on a flat rotating oil dish. The drops repelled each other, but their velocity was controlled by oils viscosity. With the increase in dropping rate, Fibonacci patterns emerged. Following Uriagereka (1998) different studies tried to identify Fibonacci patterns in different aspects of language. In phonology, Idsardi (2008) proved these patterns involve metrical feet. Medeiros (2008, 2012) identified these patterns in syntactic derivation. He took X-bar structure as starting point and expanded the basic structure into maximal projections according to binary branching conditions. The study identified that at each point of successive expansion of the tree, the maximal projections, intermediate projections, and heads were according to Fibonacci numbers. Boeckx et al. (2005) and Soschen (2008) also cited cases where grammar observed such patterns.

The recent development of studying I-language under three factors has broadened the field to a vast world of nature. The door of linguistics has been opened to the more general and more encompassing principles of nature. This broadening would lead to make linguistics a natural science in true sense. However, at the current situation of understanding, the most recent notes by the scholars like Rizzi (2017) and Lohndal and Uriagereka (2017) stressed for a need of more principled account of how principles that were not specific to language could apply to it. As the notion of going beyond

explanatory adequacy by studying three factors has dawned upon linguists quite recently, the available literature is not sufficient to delve into the unknown world of nature.

2.7 Comparative Syntax

The P&P theory marked a significant development in the history of generative grammar by proposing a systematic universal framework for studying variation and similarities among languages simultaneously. Importantly, it helped in developing an adequate explanatory model for finding answer to so called Plato's problem (Chomsky, 1986b): how would a child be able to acquire language successfully in the presence of a poor stimulus. Moreover, it would not be wrong to say that comparative syntax was made possible, in true sense, after the P&P model before which generative grammar lacked in proposing general principles common in all languages and binary possibilities of parametric choices which a learner, of a particular language, could set according to the experience provided to him/her. By the time of Extended Standard Theory different languages were considered to possess different rules specific to them, and even different constructions in one language were considered to have different rules. In the presence of such diverse mechanism of rules neither UG could find a satisfactory answer to Plato's problem, nor was the systematic comparison between different languages possible.

Huang and Roberts (2017, p. 304) contended that P&P broadened the scope of inquiry for linguists leading them to study "unprecedented number of languages" not restricting their focus on studying these languages in traditional formal domain, but raising new questions about the nature of language which was not possible with previous frameworks. In line with this, a very significant consequence of the theory was that it was now possible to discover the properties of one language (e.g., English) by a genetically unrelated language (e.g., Punjabi). Huang and Robert divided the parameters into two types by assuming that the parameters proposed in early days of P&P (during GB Theory) could be termed as macroparameters while those proposed later could be called microparameters. With the development of the theory, it was assumed that macroparameter model could not capture the micro level variation among languages, so the earlier model was not enough to conduct a comparative study. Simultaneously, with the advent of lexical parameterization hypotheses (so called Borer-Chomsky conjecture)

posed doubts for even existence of macroparametric model and even for the feasibility of P&P (Newmeyer, 2005). The current line of research, however, supported the position that parametric variation is a property of three factors of language design, and macroparameters were aggregates of microparameters (Roberts & Holmberg, 2010; Roberts, 2012). Therefore, both macroparameters and microparameters and even more levels could exist, and there was no alternative to a parameter-setting of language acquisition. The following discussion would provide an overview of literature on both types of parameters.

Head parameter was the most studied example of cross-linguistic variation to accommodate varying linear order of heads and complements in different languages. This was first proposed by Stowell (1981) and further developed by Huang (1982), Koopman (1984), and Travis (1984). The parameter suggested that languages might be either head-initial (e.g., English, the Bantu languages, the Romance languages, and the Celtic languages, among many others) or head- final (e.g., Japanese, Korean, the Turkic languages, the Dravidian languages, and South Asian languages etc.) There were some languages like Chinese which showed a mixed tendency of word order (Huang & Roberts, 2017, p. 308). Initially, in the GB theory, it was assumed that linear word order and hierarchical relations were distinct from one another. The X-bar relations were invariant (i.e., a matter related to UG principles) while linear word order was subject to parametric variation. However, Kayne's (1994) LCA established a direct relation between linear word order and hierarchy. According to this approach, complement –head word order could not be derived directly, but by virtue of a left word movement of complement. The basic word order would always be head-complement universally. In contrast to this, Takano (1996), Fukui and Takano (1998), and Haider (2012) suggested that the basic word order was complement-head. The head-complement order was derived by the movement of head.

A very significant indicator of variation among different languages was null subject parameter. Some languages like Italian (Radford, 2004) allowed their pronominal subjects of finite clauses to remain phonetically unrealized while the others (e.g., English) did not allow such constructions as their subjects were always phonetically

realized. Null subject languages were very common. Most of the older Indo-European languages and most of Modern Romance Languages were null subject languages (Huang & Roberts, 2017). In the case of Modern Romance Languages, French and some varieties of Rhaeto-Romansch were exceptions in this regard (Roberts, 2010). With some restrictions in the case of Modern Irish, the Celtic languages were null-subject languages (McCloskey & Hale, 1984). Colloquial Welsh was not a null-subject language (Tallerman, 1987). West and South Slavic was a partially-null subject (Holmberg et al., 2009; Holmberg, 2010b). Russian also appeared to fall under this category (Duguine & Madariaga, 2015). These observations confirmed Gilligan's assertion that null-subject languages were more widespread as compared to non-null subject languages. According to Rizzi's proposal inflection could license a null pronoun *pro*. Perlmutter (1971) observed that the null-subject languages would allow the wh-subjects to move out of embedded clauses over the complementisers. Relating this to the phenomenon of free inversion Rizzi (1982) proposed the parametric cluster which included: (a). the possibility of null subject, (b). the free inversion of subject, and (c). the possibility of movement over complementisers (i.e., the absence of complementiser trace effect). Rizzi illustrated with examples that Italian had all these properties while English lacked all of these.

There were certain languages like Chinese which demonstrated *null topic* parameter. Huang (1984) maintained that these languages allowed certain arguments to drop if they were interpreted as topics. For instance, if a person was asked whether he had seen a third person, he might reply: *Huang kanjian-le (Huang saw [him])*. Huang argued that the dropped object is topic in the case of such cases. German data verified the similar facts as in*[e] hab ich schon gesehen I have already seen him.* Ross presented more examples in this regard. The examples showed that the null objects were not licensed by any formal feature of Inflection or Tense (According to Rizzi's (1986) suggestion, rather they were dropped on the basis of topicalization). On the basis of this difference between null-subject and null-topic parameter, Huang and Roberts (2017) classified languages in for types: [+null subject, -null topic]: Italian, Spanish etc.; [+null subject, + null topic]: Chinese, Japanese, European Portuguese etc.; [-null subject, -null topic]: English, Modern French etc.; and [-null subject, + null topic]: German, Swedish etc.

Huang (1982a&b) proposed wh-movement parameter. This parameter helped in studying the movement phenomenon of wh-constituents cross linguistically.

(1)

a. What did Jack throw t $_{what}$?

b. Hufei chi-le sheme-(ne)
   Hufei eat-asp what-Qwh (Cheng, 1991, pp. 112-113)

c. John-ga dare-o butta-ka
   John-nom what-acc hit-Q? (Baker, 2001, p. 184)

There were certain languages like English where wh-constituent moved to the front (i.e., to spec-C) as shown in (1). On the other hand SVO structured Chinese and Japanese SOV structured were examples of *wh-in-situ* languages, as shown in (1b) and (1c) respectively, where the relevant wh-constituent remained in-situ (in the original place). A further variation among languages, which allowed wh-movement (fronting), was observed in multiple wh-questions. In such questions, English allowed only one wh-constituent to move to the front restricting other wh-expressions to remain *in-situ.* On the other side, there were languages like Slavonic (Bulgarian) which allowed all wh-elements to move to the front. This can be illustrated through multiple wh-fronting in Bulgarian in (2) below.

(2)

a. koj kogo e vidjal?
   who whom aux saw-3.s (Rudin, 1988)

b. Kogo kakvo e pital Ivan?
   whom what is asked Ivan (Boskovic, 2013)

There were certain languages like Warlbiri and other Australian languages, Latin, and other conservative Indo-European languages which showed unrestrained word order. Hale (1983) proposed that the phrase structure of such languages was flat which accounted for the fact that their PS did not show the configuration which was common in other languages. This variation could be termed as *nonconfigurationality* parameter. The languages showing non-configurational patterns showed discontinuous pattern of

constituents(e.g., there might be intervening elements between a modifier and a noun which was against the PS configuration of an NP). Among other properties of these languages was the frequent use of null anaphora and inability of A-movement. Owing to flat phrase structure, in non-configurational languages, the projection principle could hold only for lexical structure (LS) while in configurational languages the projection principle could hold for both lexical structure and phrase structure (Huang & Roberts, 2017). As a consequence of having no direct impact of phrase structure configuration on argument structure, in non-configurational languages, arguments could be omitted freely having no grammatical asymmetries among them.

Baker (1996) discussed *polysynthesis* parameter which set binary options for languages in two aspects: whether arguments of a language were morphologically or syntactically visible for theta-role assignment i.e., its arguments showed overt argument with the predicate, and whether noun incorporation was possible in languages. Mohawak allowed both of these aspects; Navajo allowed former, but not the latter; however, the languages like English and Chinese allowed neither of the two aspects of the parameter. Noun incorporation was possible in languages which showed the agreement visibly. Baker related the following properties to Polysynthesis parameter: syntactic noun incorporation, necessary object agreement, pro-drop, free word order, no NP reflexives, no true quantifiers, and no true determiners. Mohawak type nonconfigurational language differs from the configurational languages (e.g., English, Japanese, and Chinese etc.) on the basis of *polysynthesis* parameter.

Chierchia (1998a&b) introduced *the nominal mapping parameter* which concerned the mapping of nominal from syntax to semantics. Nominal could have two possible semantic properties across languages: argumental and predicative (which can be jointly represented as: [+Argument, + predicate]. It implied that nominal could function as arguments or predicates or both in a language. Chierchia (1998b, p. 354) maintained that the languages which allowed [+Arg, - Pred] parametric setting would manifest the following properties: generalized bare arguments, the mass extensions of all nouns, no plural marking, and generalized classifier system. Chinese and Japanese showed such parametric setting. The nominal in these languages appeared as bare arguments without

articles and quantifiers. For instance, there would be one equivalent: *I ate apple* for different structures like *I ate an apple*, *I ate the apple*, and *I ate apple(s)*. Moreover, arguments in these languages could not take plural forms as nominal with mass extensions could not be pluralized, so special devices were needed to classify singular/plural distinction. On the other hand, in [-arg, + pred] languages, nominal were always predicates and arguments could never be bare nouns. In these languages, arguments bore plural markings, but lacked classifiers. French and other Romance languages, with little complications, exhibited such parametric settings (Longobardi, 1994). The languages which observed the third parametric choice [+arg, +pred] had mass noun and plurals as bare arguments, but didn't have singular count nouns as arguments. Their arguments bore plural marking. These languages lacked classifiers. English and Germanic languages observed this parametric setting. Singular bare count nouns can function as predicates in these languages as: *We elected John president* (Huang & Roberts, 2017).

Fukui (1986) proposed that a parametric choice among languages might allow certain languages to lack functional categories (i.e., C, D, or I). In fact, he presented a general theory about functional categories supporting the argument that only these categories might project above X-bar level implying that only they could have specifiers. He analyzed Japanese as a language which lacked C, D, but contained a very defective I (or T). The absence of these categories might be a major reason behind its being a *wh-in-situ* language as owing to absence of C, D, there would be no landing site for Japanese wh-expressions where they could move to. This was evident in Baker's (2001, p. 184) example in (1c) which has already been discussed. Furthermore, the lacking of D was confirmed by Chierchia's (1998b, p. 354) proposal about [+Arg,-Pred] languages which include both Japanese and Chinese.

Many of the parameters reviewed so far were introduced during the time of GB theory. Chomsky (1981a) pointed out that (owing to their occurrence in clustering) a learner had to observe one of the properties associated with a particular choice of parameter, the rest of the properties were taken for granted. For instance, according to Rizzi's (1982) proposal if a language allowed null subject, the other properties (i.e., free

subject inversion and absence of complementiser trace effect) would come for free. However, there were empirical and theoretical problems with these parameters. To start with empirical problems, the presumption about rigid harmonic occurrence of many parameters was questioned in many studies. Cinque (2013) suggested that rigidly harmonic occurrence of parameters was a rare possibility. For instance, the head parameter was assumed to require rigidly that a language might be either head-initial or head final. However, there were languages like German, Mandarin and Latin which showed a mix tendency towards the parameter. Newmeyer (2005) criticized the cluster of properties associated with classical null-subject parameter. On the other side of the criticism on these parameters, there were arguments which defend the existence of such parameters. For instance, Biberauer et al. (2014) suggested the general constraints which governed the possible combination of head-initial and head-final constructions.

An alternative to the parametric approach adopted in GB theory could be seen in lexical parameterization hypothesis based on Borer (1984) and Chomsky (1995b). Following Baker (2008) this could be termed as Borer-Chomsky-Conjecture: All parametric variation depended upon difference in the features of particular lexical items (i.e., functional heads). Now the parametric variation was restricted to a class of formal features (i.e., Case, φ, categorical features) (Chomsky, 1995b), or features like EPP, Edge features. For a particular language T might be $\pm$ φ could capture the difference among languages that the verbs in languages might or might not inflect for person and number. English had a positive value for this feature as its verbs inflected, although limitedly, for person and number. On the other hand, Chinese and Japanese had a negative value as their verbs did not inflect for number and person. In a similar way T might be $\pm$ EPP. The relative value of this parameter determined the syntactic position of overt subject in a language along with the possibility of V to T movement. This provided the difference between Welsh and French (McCloskey, 1996; Roberts, 2005).The strength of this approach was the fact that this was a restrictive and simplified approach which reduced the parametric variation to a number of formal features associated only to the particular lexical items (i.e., functional heads). This led to a situation where many previously formulated parameters were considered as redundant. Furthermore, Borer (1984) highlighted the benefit of the new approach regarding language acquisition as:

“associating parameter values with lexical entries reduced them to the one part of a language which clearly must be learned anyway: the lexicon” (Borer, 1984, p. 29).

There was no doubt about the fact that the parameters suggested during GB theory could not fit well into MP. So, because of theoretical and empirical problems the microparameters approach, as suggested by Borer-Chomsky Conjecture, was adopted during the MP where the parametric variation was reduced to variation in formal features of functional heads of different languages. Abandoning the concept of macroparameters led some researches (e.g., Boeckx (2014)) to doubt the very existence of P&P model. This could not earn a grave attention as no suitable alternative to the P&P model was proposed. On the other hand some responses to the possible questions whether macroparmeters existed at all, and whether microparmeter alone could accommodate the syntactic variation among languages resulted in empirically and theoretically sound studies. For instance, Kayne (2005, 2013) maintained that microparameters helped in studying closely related (apparently similar) languages (e.g., Italio-Romance varieties) with respect to the variation among them which was not detectable as macroparametric variation. To elaborate this fact further, if, for instance, the variations in verb/clitic order was to be observed between two or more Romance languages (Roberts, 2016), this couldn’t be dealt as macro level difference in word order as all the Romance languages strictly observed head-initial word order. This observation implied that all variations couldn’t be studied as macro level generalizations, some minute variations demanded micro level study of variations. For simplifying the macro-micro divide a very useful proposal came from Kayne (2013), in the following observation.

> (All) large language differences (e.g., polysynthetic vs. non- (cf. Baker (1996)) or analytic vs. non- (cf. Huang 2010 [= 2013]) are understandable as particular arrays built up of small differences of the sort that might distinguish one language from another very similar one, in other words that all parameters are microparameters. (Kayne, 2013, p. 137)

Baker (2008) proposed the need of combining microparameters with macroparameters by suggesting that the strict adoption of either of the two approaches would be problematic:

> The strict microparametric view predicts that there will be many more languages that look like roughly equal mixtures of two properties than there are pure languages, whereas the macroparametric-plus microparametric approach predicts that there will be more languages that look like pure or almost pure instances of the extreme types, and fewer that are roughly equal mixtures. (Baker, 2008, p. 361)

In comparison to the sole dependence on macroparametric view where all languages were divided into falsely rigid types as head-initial or head final, a mixture of macroparametric and microparametric approach was considered more suitable.

Gianollo et al. (2008) put forward an important proposal which is based on the fact that UG did not provide the parameters directly; rather UG only provides schemata which along with primary linguistic data (PLD) creates the parameters. There schemata for each formal feature F of a functional head includes: Grammaticalisation, Is F grammaticalised? ; checking, If F is checked by X (a category); Spread, If F spread over Y (a category)? ; Strength, if F is checked by X, strong? (Does F overtly attracts X?); and Size, if F is checked by a head X, or something bigger? Gianollo et al. (2008) checks these schemata for definiteness feature in relation to 47 parameters about internal structure of DP across 24 languages. The significance of their proposal is that parameters are no more considered primitive to minimalist system, but considered to be obtained from other aspects of the system.

Roberts and Holmberg (2010) adopted the same position that parameters were not primitive to UG; however, based on Holmberg's observation: "a parameter is what we get when a principle of UG is underdetermined with respect to some property. It is a principle minus something, namely a specification of a feature value, or a movement, or a linear order, etc." (Holmberg, 2010). Roberts and Holmberg (2010) moved one step forward from Gianollo et al. (2008) to assume that UG was not responsible for providing

parameter schemata even. According to their view parametric variation was the emerging property of three factors of language design which was in line with most recent minimalist goal. In this way, parameters involved generalized quantification over formal features. According to Roberts and Holmberg (2010), "In essence, parameters reduce to the quantificational schema in [(23)], in which UG contributes the elements quantified over (formal features), the restriction (grammatical categories) and the nuclear scope (predicates defining grammatical operations such as Agree, etc)" (p. 60). Hence, UG was not responsible for providing quantification relation because the third factor suggested that to compute relations was a part of general human computational abilities which was not specific for language. So, parameter schema resulted from an interaction of UG elements and general human computation.

What was the role of second and third factor in acquisition of certain parametric variation was discussed in detail by Roberts (2012) and Biberauer and Roberts (2012, 2015 a, b). The two acquisition strategies: FE and IG were suggested. FE required the postulation of fewest possible formal features, and IG required maximizing the available features. Biberauer and Roberts (2014) highlighted the importance of interaction of second factor (PLD) and third factor (FE, IG) in the acquisition process. In this process, FE required postulation of minimum number of formal features. IG embodied "learning mechanism of moving from existential to universal generalization" (Biberauer & Roberts, 2014, p. 7) which was defeasible by PLD to which the acquirer was sensitive in certain aspects (e.g., movement and agreement, in his/her ready encounter to declaratives, questions and imperatives). The effect of parametric variation could emerge from the interaction of PLD and FE/IG. This mechanism of learning was very simply illustrated by Huang and Roberts (2017, p. 323) as the postulation of the learning path according to the following procedure: Initially the acquirer would assume that no head bore a formal feature F. This assumption of the learner would satisfy FE and IG. At a second stage as soon as some F would be detected in the PLD, the learner would assume, by virtue of IG, that all heads bear F. This overgeneralization would be against FE which would soon be defeated by further interaction to PLD whereby the learner would postulate that some heads would bear F while others would not. This No>ALL>Some procedure would lead to a hierarchical classification of different parameters which was originally proposed in

Biberauer and Robert (2012) according to whom for a given value v_i of the variant formal feature F the following four levels of parametric variation would exist: Macroparameters- all heads of the relevant type (i.e., all probes, all phase heads, etc.) share v_i; Mesoparameters- all heads of a natural class (e.g., [+V] or a core functional category) share v_i; Microparameters- a small lexically definable class of functional heads showed v_i; and Nanoparameters- one or more individual lexical items are specified for v_i. Biberauer and Roberts (2015b) supported these hierarchical classes of parameters by illustrating the parametric changes that occurred in the history of English.

2.8 South Asian Languages and Minimalist Program

It was significant to critically examine the existing literature on Punjabi and, linguistically, its close neighbors: The South Asian languages-Urdu/Hindi, Marhati, Kashmiri, Gujrati, Bengali etc. The survey of these languages grew more significant as it was identified that a very few studies on Punjabi language, like Khan and Kausar (2019) and Khan and Kausar (2021), were conducted under UG paradigm- to the best knowledge of the researcher. A rare mentioning of Punjabi was found during the major works on other languages (e.g., on Marhati by Nayudu (2008)). However, among the close neighbors of Punjabi, both linguistically and geographically, Urdu/Hindi was the most researched South Asian languages under UG paradigm. The following discussion would critically review the UG research on South Asian languages particularly focusing on case, agreement, and wh-movement dependencies in these languages. During the critical survey it was noted that accounts of these languages significantly contributed to the theory of Universal Grammar.

2.8.1 Case and Agreement

In generative linguistics there was a strong inclination towards treating case and agreement as a morphological manifestation of a single abstract relationship between a lexical item and a nearby noun phrase (Chomsky 2000b, 2001). This view was testified by empirical studies of many languages (e.g., English) where a verb agreed with an NP if the latter possessed a nominative case. This was strikingly true for Urdu/Hindi where subjects in imperfective possessed nominative case while in perfective clauses they possessed ergative case. This variation in case caused by aspect/tense features of the

clause affected the agreement relationship as the verbs in imperfective agreed with the subjects while in perfective clauses they didn't (Mohanan, 1995, p. 83). This was evident in (Urdu/) Hindi derivations in (1) below.

(1)

a. Anil kitaabẽ becegaa
Anil.m-nom book-f.pl sell-fut.m.s
(Anil will sell (the books)

b. Anil-ne kitaabẽ becı̃ı̃
Anil-erg book-f.pl sell-perf-f.pl
(Anil sold the books) (Baker, 2013, p. 609)

In former construction the verb *becegaa* agreed with the nominative subject as the clause was imperfective while in latter perfective construction the verb did not agree with ergative subject *becı̃ı̃*, instead it agreed with the object *'kitaabẽ'*. In such agreement bare NP could not occupy Spec-T position in the presence of a subject, so T appeared to agree with an NP, which can never be its specifier, by virtue of downward agree (Baker, 2013, pp. 609-615).

With respect to case, languages could be broadly divided into two types: nominative- accusative (e.g., English) and ergative- absolutive (e.g., Urdu/Hindi). In the former type of the languages subject of both transitive and intransitive clauses were treated separately from the object (Nayudu, 2008, p. 61). Latin was one such language as manifested in this example: "domin-us veni-t (the master comes) and 'domin-us serv-um audi-t (the master hears the slave)" (Dixon, 1994, p. 9). In both the Latin constructions, whether transitive or intransitive, the subject had same case marking *-us* which reflected the nominative case while the object had a separate case marking *–um* which reflected accusative case. According to Dixon (1994) and Bittner and Hale (1996) ergativity could be further divided into two types: syntactic and morphological. In syntactic ergativity the syntactic constraints determined the separate treatment of subject of transitive clause in one way while the subject of intransitive clause and object of transitive clause in another way. Dyirbal is an example of syntactic ergativity. In morphological ergativity, as

defined by Dixon (1994), the subject of transitive clause, subject of intransitive clause, and object were marked with case inflections (Latin), particles or adposition (Tongan), or verbal co referencing affixes (Abaza, Swahili) (Nayudu, 2008, p. 63).

Nayudu (2008), on the basis of his analysis of Marhati data –a South Asian language, explicated that not all languages could be closed in tight compartments of either of the two types: nominative and ergative. There were a number of languages to show split-system: a combination of both nominative and ergative case marking. In such split systems, a number of factors like semantics of verb, semantics of NP, person, tense, aspect, mood etc. would condition the case marking mechanism. For instance, the Marhati language allowed ergative case in clauses with pefective aspect or past tense as evident in the following example (2).

(2) Ram-ni sui uchal-l-I hoti
Ram-erg needle pick-perf be past-3.s.f
(Ram had picked up a needle) (Nayudu, 2008, p. 64)

The subject *Ram* was marked an ergative case. The same language marked nominative case to its present tense subject as evident in the following example (3).

(3) Ram sui uchal-t-o
Ram-nom needle pick-pres-3.s.m
(Ram picks up a needle.) (Nayudu, 2008, p. 64)

The other South Asian languages also manifested such type of split tense/ aspect/ mood: Hindi (Mahajan, 1989), Kashmiri (Hook, 1985, as cited in Dixon 1994), Burushaski (Dixon, 1994), and Gujrati (Mistry, 1997)). In comparison to these Indo-Aryan languages, there were languages like Carina that allowed ergative in future tense, and like kukiu where ergative case was optional in imperative hortative, and intentional mood, but obligatory in descriptive mood (Dixon, 1994).

Ergative case remained problematic for the UG researchers; it might be due to the complexity of factors which are required to ensure this quirky case on the subject. How and from which functional head ergative case was marked, and what is the case of direct

object (DO) in transitive clauses of ergative languages had been the major problems for the researchers to settle. The studies conducted to find out solutions to these problematic issues divided the scholars in three major camps which adopted three markedly different approaches towards ergativity. The first approach adopted by Levin and Massam (1985), Bobaljik (1993), Chomsky (1993), Bittner and Hale (1996a), and Bobaljik and Branigan (2006) stipulated that ergative was a high case sourced from the CP/TP domain. The second approach initiated by Marantz (1991), developed extensively in Baker (2014a, 2015), and carried forward in Baker and Bobaljik (2017) assumed ergative as a dependent case whereby the marking of ergative did not depend on the absolute position of an NP/DP in a syntactic structure, but it depended on its relation to other NP/DPs in the same domain. In case there were two NPs in the same domain, the ergative would be assigned to the higher NP. There was a third line of reasoning which viewed that ergative was inherent case assigned from *v* to the EA at Spec-*v* position. This approach was adopted in Woolford (1997, 2006, and 2017), Aldridge (2012), Anand and Nevins (2006); Laka (2006, 2017), Legate (2006, 2008, 2012, and 2017), Massam (2006), Coon (2013), Mahajan (2012, 2017), and Sheehan (2017). Following discussion critically examines the leading figures of the three approaches.

Bobaljik (1993) argued that ergative-accusative pattern was essentially a structural case pattern which corresponded to nominative- accusative case pattern within case theory. Both types of cases were assigned in a similar way in transitive clauses. Nominative/ergative case was assigned to subject NPs at Spec-AgrS position (Bobaljik labels the higher functional projections AgrS as Agr 1 and lower Agr O as Agr2) and accusative/ absolutive case was assigned to NPs at Spec-AgrO position. However, Obligatory Case Parameter (OCP) had to decide which of the two cases i.e Nominative or Absolutive was to be assigned to the sole argument in intransitive clauses. In nominative languages, AgrS (1) phrase was active to assign case to subject NPs, so the subject would possess a nominative case. On the other hand in ergative-absolutive languages, Agr O (2) phrase was active to assign case to the sole argument, so the subject of such languages would possess absolutive case. A modification was found in Bobaljik and Branigan (2006). In their framework subject moved to Spec-T position to get its features checked, and object moved to Spec-*v* position to get its features checked. In ergative languages the

little *v* couldn't check the features of object, so object had to move to a higher position which was only T. So, the object had to move to Spec-T position to check off case features. A problem aroused how case features of subjects could be checked when object had already occupied this position. They adopted multiple case checking system wherein T could check the case features of more than one entity i.e., subject and object. Approximately similar position was adopted by Otsuka (2002). This framework is highly problematic because of simplifying a very complex phenomenon. Primarily, it fails to capture the difference between nominative and nominative which required different conditions for their licensing in different languages. If they were assigned by a similar functional head T, why was there a need for an additional *-ne* marking on subjects in case of ergative. The answer to this pivotal question is very hard to find in structural case approach towards ergativity.

The second approach adopted by Baker (2014a, 2015), and Baker and Bobaljik (2017) viewed that ergative was a dependent case as it depended on the presence of another NP in the same case marking domain. It entailed that if there were two NPs present in one case marking domain, the higher NP would be marked ergative. Baker & Bobaljik (2017) provide the following example (4) of Shipibo to illustrate their line of reasoning.

(4)

a. Maria-nin-ra ochiti nook-ke.
   Maria-erg-prt dog find-perf
   (Maria found the dog.) (Baker & Bobaljik, 2017, p. 116)

b. Joni-bo-ra teet-ai
   person-pl-prt work-impf
   (The people are working.)

c. Kokoti-ra joshin-ke
   fruit-prt ripen-prf
   (The fruit ripened.) (Baker & Bobaljik, 2017, p. 120)

In transitive structure (a), the subject bears ergative case while in the intransitive structures (i.e.,(b) unergative and (c) intransitive) the subjects do not bear the ergative case. There assumption is based on the idea that the ergative on subject in (a) depends on the presence of a lower NP in the same case marking domain. The absence of ergative in (b) and (c) is due to the absence of a lower NP in such domains. This is even rather simplification of the matter. The literature on ergative case identifies a number of factors which are needed for assignment of ergative case. For instance, in Punjabi (Butt, 2017) and Urdu/Hindi, a lot of factors are identified which license the marking of ergative on the subject. These factors include: agentivity, perfective aspect and third person (person factor is not relevant in the case of Urdu/Hindi). In light of these facts, these approaches appear problematic for their over simplification of a complex phenomenon.

Adopting the third line of reasoning, Massam (2002) favored that ergative was a lexical case on the basis of her analysis of Niuean (a Tongic subgroup oceanic language with VSO word order). According to her analysis of a transitive clause of Niuean as in: "Ne paoaoa e au a Tomu (I stuck Tom)" (Massam, 2002, p. 186), the object DP merged with V to form VP. This VP merged with *v* to form *v*P. Massam adopted multiple-specifier version to accommodate that Ergative case features of subject and absolutive case features of object could be checked at Spec-*v*P position. The subject DP with ergative features would merge at higher specifier positions, and the object DP would move to lower Spec-*v*P position for checking case features. This *v*P would merge with I to form IP. The EPP features on I would attract VP (with verb and object trace) to Spec-IP. Hence, VSO word order would surface.

Woolford (2006, 2017) argued that ergative was a lexical case, and case and agreement couldn't be treated independently. In order to resolve the problematic issue how the ergative case was assigned, Woolford (2006) assumed that transitive *v* would assign ergative case to subject DP/NP at Spec-*v*P position. After receiving ergative case, the subject DP/NP would be left inactive for Agree, so T had to Agree with the nearest NP/DP left (i.e., object in ergative languages like Hindi). In an intransitive clause of such languages, the *v* would not check ergative case features of the subject, so it would remain active to Agree with T which might Agree with the highest NP (i.e., the subject),

checking the same case features which it checked for object NP in a transitive ergative clause. Hence, in ergative languages, subjects of transitive clause would bear ergative case while subjects of intransitive clauses and objects would bear a similar absolutive case.

One among the leading figures of the third line of reasoning, Legate (2008) viewed that ergative was an inherent case. More significantly she differed from Woolford (2006) by assuming that the object in ergative subject derivation was assigned case by little *v*, and the marked obj had dative instead of accusative case. In order to cope with the problem of valuation of un-interpretable features of T in ergative derivations, she proposed that T might enter into derivation with interpretable ϕ features. The following examples in (5) reported in Legate (2017) may illustrate the ergative as inherent case phenomenon.

(5)

a. gaadii mudii.
   vehicle-nom turn.perf
   (The vehicle turned.) (Mohanan, 1994a, p. 34)

b. Ram-ne darvazzaa kholaa
   Ram-erg door open-perf
   (Ram opened the door.) (Mohanan, 1994a, p. 8)

c. Ram darvazzaa kholegaa
   Ram-nom door open.fut
   (Ram will open the door.) (Mohanan, 1994a, p. 8)

The subject of intransitive structure 5(a) does not bear ergative marking like the third person subject *Ram* of perfective structure 5(b) which bears ergative marking. The same subject loses ergative in non-perfective clauses as evident from future aspect clause 5(c). Legate (2017) provides evidence of lexical effect which leads to assume that ergative is determined by V or *v* in lower domain (i.e., *v*P).

The data has provided further evidence to support that ergative is particularly sourced from the functional category *v*.

d.	Us-ne	gaarii	pahaarii	per	cerhaayii.
	he-3.s.m-erg	car	hill	on	climb.perf
e.	Vo	garrii	paharrii	per	cerhaa layaa.
	He-3.m.s-nom	car	hill	on	climb bring.

It is easy to notice in structures (d) and (e) that the difference of ergative marking in the former and non-marking in the latter is due to the presence of light verb *layaa* (bring) in the latter structure. It may help in assuming that light verb (*v*) is the source of ergative case.

This study identified two major problems in the proposals of Legate (2008): the homophonous *-nuu* marking on obj was very difficult to justify as the representative of dative case instead of accusative case as the accusative *–nuu* marking on DO and dative *–nuu* marking on subj and indirect object are differently possible in different grammatical situations (i.e., reduplication and derived subj forms); furthermore, the entrance of T in derivation with interpretable ϕ-features could hardly be proved in the presence of SMT. In her later work, Legate (2017) did not address the issue of case valuation on obj, but her rendering on the identification of the cluster of factors which ensured ergative case could be utilized with benefits. Mahajan (2017) countered Legate's (2008) arguments by stipulating that obj (IA) of an ergative clause was not in accusative case, but it was assigned nominative case by T. This study criticizes the works of Woolford (1997, 2006, 2017) Legate (2008, 2012, 2017), and Mahajan (2012, 2017), among others, for not addressing how the un-interpretable ϕ-features of little *v* are valued in a mechanism where *v* assigns ergative to EA and T assign nominative to IA? As subj EA does not fall in the domain of the little *v*, the assignment of ergative case cannot satisfy the un-interpretable features of *v*. This gap of analysis might have emerged because of avoiding some recent developments in P&P framework under *phases* version of minimalist program as assumed by Chomsky in his post-2000 UG research. Identifying this gap, this study intends to propose a satisfactory solution to such problems under more recent developments of UG research.

2.8.2 Wh-dependencies in South Asian languages

South Asian languages apparently exhibited a *wh-in situ* behavior in wh-questions; however, there were a number of studies to propose that these languages involved wh-movement to the left of VP (i.e., to a position lower than CP). Jayaseelan (1996) argued an overt *wh-movement* in Malayalam (a Dravidian language of SOV surface order). Assuming Kayne's (1994) proposal of a universal base word order to be true for this language, Jayaseelan (1996) proposed that a head initial VP was dominated by FocP. The *wh*-element, bearing focus features, would originate in a post verbal unfocused position. This wh-element would move to Spec- Focus position to check focus features. The language appeared *wh-in situ* because after the movement of the wh-element the whole VP had to be evacuated from VP internal position. It was important to note that [+Wh] subject moved to Spec-Focus position while [-Wh] moved higher to obtain OSV word order. An answer to why wh-element moved to a position lower than CP could be found in Jayaseelan (2001) where it was proposed that the actual Q-operator was placed in a phrase (i.e., Force P) which possessed the illocutionary force features of the sentence. It was assumed that Q bounded the *wh-element* in Spec-FocP, or alternatively it checked the un-interpretable feature of wh-phrase. Hence, wh-element would move to a lower Spec-FocP which was under the control of Force head. In this way, there was no movement to Spec-CP.

The word order for wh-elements was not usually very strict in most of the South Asian languages. Mahajan (1990) and Dayal (2014) observed this about Hindi/Urdu. In this regard, there was evidence of wh-movement to higher positions. Manetta (2009, 2011) proposed Spec-*v*P to be the landing site for moving wh-elements. If derivation was assumed to complete in phases and *v*P was the first phase to complete, it would be the case that left edge of *v*P was the potential candidate for wh-element. According to Bayer and Cheng (2015, p. 18), the study of languages with post verbal clausal complements: the major Indo-Aryan languages (e.g., Hindi/Urdu, Bangla, Marhati, Gugrati, Kashmiri and others) added new dimension to the issue of *overt vs. covert* movement in South Asian languages. In various authors along with the assumption that wh-elements moved overtly, there was an expectation that wh-element could move a long distance. This could be illustrated by quoting example (1) from Hindi/Urdu and example (2) from Bangla.

(1) Sita-ne$_1$ kis-ko socaa [ki Ravii-ne t_1 dekhaa]
Sita-3.f.s.erg who-acc think-pst.m.s [that Ravii-erg see-pst.m.s]
(Who did Sita think that Ravi saw.) (Manetta, 2011, p. 115)

(2) jɔn ke$_i$ bollo [CP t_i cole gæche]
Who did John say left? (Simpson & Bhattacharya, 2003)

According to many studies such as Davison (1988), Sinha (1993), Dayal (1996), and Subbarao (2012) derivations like (1) could hardly occur in normal speech and if they occurred at all they could not be considered examples of long *wh-extraction*. Mahajan (1990) proposed that wh-extraction was adjunction in the sense of Quantifier Raising in Hindi. For Bangla, Simpson and Bhattacharya (2003) assumed that CP was the direct object position of the matrix verb, and the derivation was an example of straight *wh-movement*. This demanded an explanation of CP-phase in languages like Hindi/Urdu and Bangla. This was pointed out by Mahajan (1990) that there was no evidence of any role of left CP-edge in Bangla and Hindi/Urdu. The moved wh-element might stop at Spec-*v*P or Spec FocP, but never at Spec CP.

In the works like Jayaseelan (1996) as well as of Simpson and Bhattacharya (2003), the question of word order was addressed with respect to movement to Spec-*v*P or Spec FocP position. However, Manetta (2009, 2011) adopted the OV-order approach. His argument was supported by the evidence that if object *wh-* originated in post verbal position, it could be expected that it remained *in-situ* in wh-questions. However, in multiple wh-questions, the South Asian languages would not allow wh-objects to remain in post verbal position. Wali and Koul (1997, p. 26) provided evidence about Kashmiri and Mahajan (1990) about Hindi that no wh-element would be left behind in the post verbal complement position. Bayer and Cheng (2015) cited the construction (3) from Bangla.

(3) *Dilip goto bochor ka-ke kon boi-Ta diyechilo?*
Dilip gone year who-DAT which book-CL gave
(Who did Dilip give which book last year?) (Bayer & Cheng, 2015, p. 20)

About (3) it was assumed that originating in OV base, the object wh-element *kon* remained *in-situ* in this construction. However, the deviant status of non-adjacency in constructions like (3) entailed that both wh-phrases had to move to a functional head requiring a multiple specifier position.

Bayer and Cheng (2015, p. 21) summed up the status of wh-movement in South Asian languages as:

> There are reasons to believe that what has previously been taken to be wh-in-situ in the South Asian languages is actually overt movement to the left edge of VP/*v*P. Except for the V2-language Kashmiri, there is no evidence for wh-movement to the C-domain. Thus, the South-Asian languages seem to form a typologically interesting and significant type between full moving and in-situ languages. (Bayer & Cheng, 2015, p. 21)

On first instance, this study identifies that the free word order of South Asian languages like Urdu/Hindi and Punjabi etc. sometimes render such wide range of scrambling/movement of wh-elements in such languages that it becomes hard to assume that they may be restricted to a syntactic positions like Spec-*v*/*v** or any other position within a CP domain. For instance, the wh-elements in such languages may move right or extreme left position without any effect to the grammaticality of the derivations. Such extra syntactic movements are very hard to accommodate under an approach which restricts the movement of wh-elements to Spec-*v*/*v** position. Secondly, this study identifies that Punjabi k-expressions, the counterparts of English wh-expressions, have not yet been explored under the rubric of UG. Identifying these two major gaps with reference to wh-/k-expression dependencies, this study aims to resolve the problem of free movement of wh-elements as exhibited by Punjabi and its comparison to English, a language showing wh-movement to some restricted Edge of *v**/C position, under more recent UG framework. The renderings of this study may prove beneficial for syntactically close languages like Urdu/Hindi, Marhati etc.

2.9 Works on Punjabi Grammar

Strange was the fact that the earlier efforts, in recent history, of writing systematic grammar for Punjabi was made by non-native speakers. The early tradition of Punjabi grammar, like other Indo-European languages, was European (Bhatia, 1993). Carey's (1812) *A Grammar of the Punjabee Language* was the oldest Punjabi Grammar available. This grammar provided language specific rules which a learner of the language could grasp to learn this 11th most popular language of the world. Carey in the very initial pages confessed: "The following sheets are intended to furnish short and appropriate rules for the acquisition of this language, without attempting any remarks upon the nature of grammar in general" (Carey, 1812, p. iii). This grammar could not be criticized for not providing an account of Punjabi grammar under UG rules applicable to all languages as the modern critique of the E-languages grammars (which were based on observational facts about languages) had to come at least after more than one and a half hundred years from this attempt. However, this grammar was significant as it first systematized the grammar of an important Indo-Aryan language. Different sections of this grammar were titled according to different parts of speech (e.g., *Of Adjectives, Of verbs, Of Adverbs* etc.) Carey divided Punjabi parts of speech into following categories: Substantives (which further include proper names, names of things, verbals, names of abstract qualities, names of kinds or generic nouns, and imitative sounds), Adjectives, Pronouns, Verbs, and indeclinable particles.

After Carey the other significant contributions on Punjabi grammar which came from European writers were Newton (1896), Cummings and Bailey (1912), and Grierson (1916). Following the European writers, the native scholars started to contribute their share. Among the invaluable contributions from the native scholars were Jain (1934) and Gangawala (1935). The major contribution of these writers was the recognition of the difference between written and spoken language, and further identification of different regional and social varieties of the two forms. Bhatia (1993, p. xxxiii) observed that

> Bailey (1904, 1914), Sethi (1971), and Jain (1934) have added invaluably to our understanding of phonetics and phonological system of the language, and 'among the descriptions, using the framework and insights of modern

> linguistics, particularly noteworthy are the contributions by Gill and Gleason (1963), and Bahl (undated; 1957; and 1969). (Bhatia, 1993, p. xxxiii)

A significant endeavor to formulate organization of the linguistic structures of modern Punjabi was attempted by Gill and Gleason (1962, 1969, 2013). Their study built on the assumption that all languages had their peculiar patterns, specific to them, which could be understood by the internal relationship and opposition between the elements of a particular language. They named this system as structural economy, or 'Sanjamਸੰਜਮ'. They, in fact, attempted to build on Saussure's conception of linguistic structure as they observed: "Following Ferdinand de Saussure, we believe that a linguistic structure is like a game of chess where the elements or pawns must be described in terms of their internal relationship and oppositions" (Gill & Gleason, 2013, pp. 11-12). Hence, their comparative study of two languages (i.e., Punjabi and Hindi, or Punjabi and English) was not based on finding parallel/similar patterns across two or more languages, which they straight forwardly discarded even to the possibility of existence, rather they assumed that each language had its own pattern or organization, and 'the elements of a structure were organized in a particular arrangement or orderਰਚਣ…….e.g., for the English (structures):

He leaves tomorrow, He throws a ball, and He leaves her for good, there must have been an entirely different set of constructions in Punjabi. There was no parallel structure in any other Indian or non-Indian language to the oppositional system within the Punjabi present-tense (p. 13). From a UG point of view, Gill and Gleason's comparison of different languages would be very faulty and vulnerable to criticism. A grammar based on strict rejection of parallel structures in two languages would not render a comprehensive model of analysis failing thereby to answer some very significant questions raised by current linguistic theory.

From Pakistan, significant recent works on The Punjabi language come from Bdakhshani (1973), Mughal (2005), Khan (2012), Rehman (2013), Shah (2015), Khan and Kausar (2017, 2019, 2021). Badakhshani (1973) provided a very detailed grammar dividing his work in two distinct parts *Sarf* (word form/structure) and *Nahaw* (sentence structure). However, his work may pose problems for a current user owing to the fact it

was written in an older framework which could not consider many factors in line with modern grammar. For instance, he divides past verb from into near and remote both of which refer to perfective aspect. According to him, the sentences (a) and (b) are in past tense.

a. Us-ne khat likhia aye.
   he-3.m.s-erg letter-m.s write-perf.m.s is
   (He has written a letter.)

b. Main kitaab parhi aye.
   I book read-perf.f.s is
   (I have read the book.) (Badakhshani, 1973, p. 141)

An understanding of sentences in (a) and (b) in past tense may be problematic under more recent framework which places such sentences in present perfect. The evidence of present auxiliary aye (is) confirms this fact. A revisit of the grammar in light of some recent developments may render Badakhshani's grammar more fruitful. Mughal's (2005) grammar is not comparable to Badakhshani's grammar in terms of providing a detailed insight into structure of the language. While talking about parts of sentence, Mughal only mentions subject, verb, and object. In a similar way he does not provide a detail of sentence types with respect to aspect and tense.

Shah's (2015) grammar is a more helpful source for both modern learners and researchers of this language owing to that it provides a more detailed set of Punjabi data in more recent terminology utilized by most of the traditional grammars. Shah (2015) endeavored to formulate a grammar titled *Punjabi Grammar,* which described Punjabi phonology and syntax in detail, but still it was far away from presenting an explanatorily adequate grammar. It was in line with other Punjabi Grammars produced by the Indian counterparts as it just described the structure of the language in a rather traditional way. All such efforts provided E-language grammar of the language fulfilling only the first level of adequacy stipulated by Chomsky.

A recent attempt of construction of an Open-Source Punjabi Resource Grammar, by Virk et al. (2011) presented first computational Punjabi Grammar which was constructed out of a general grammatical system called *abstract syntax*: "a collection of all such categories and rules, which were independent of any language" (Virk et al., 2011, p. 70). This resource grammar built on the notion of *Grammatical framework* (GF) (Ranta, 2004): a special purpose program for developing multilingual grammars. The Framework divided grammars into two types: abstract and concrete. Abstract grammar, as just mentioned covered the general aspects independent of particular languages while concrete grammar was the particular rules which governed particular languages. The concrete syntaxes of different languages might be constructed from abstract syntax. According to Ranta (2009) it was difficult to write an application grammar (concrete grammar) without a resource (abstract grammar). Apparently, this approach seemed closer to generative grammar approach; however, the framework was very redundant and could only be compared, in its basic assumption, to the vey initial period of generative grammar. The GF approach adopted by Virk et al. (2011) for building a resource grammar of Punjabi provided a descriptively very complex and redundant grammar where complex rules were required to describe particular categories NP, VP etc. For instance, the construction of NP represented with a record of three fields as: NP= {s: NP Case; a: Agr; isPron: Bool}. The label *s* represented inflection table which contained information regarding case. NP Case had further two constructs: NPC Case which stored the information regarding lexical case (i.e., Direct, Oblique, Vocative and Albative) and NPErg. The second symbol *a* represented the agreement (Arg) features and contained information regarding gender, number and person which was helpful for agreement with other constituents. The third label *is Pron* was a Boolian parameter which showed whether NP was constructed from a pronoun. This parameter was helpful in studying the ergative behavior of verbs with first and second person pronoun (pp. 71-72). Such a complex description of just one category (i.e., an NP) would be considered obsolete in current linguistic theory. It might pose a great challenge, in terms of explanatory adequacy, to answer the question how a Punjabi child of 18 months could grasp basic rules of Punjabi grammar correctly. So, the GF was easily questionable for its excessive descriptive content and lack of explanatory adequacy.

In *The Oxford Handbook of Ergativity*, Butt (2017, p. 747) observes: "The standard Punjabi grammar is Bhatia (1993), an older useful grammar is Cummings and Bailey (1912) and a recent dissertation is Akhtar (1999)" (Butt, 2017, p. 747). A significant contribution of Akhtar (1997, 1999) is the description of four morphemes: '*-i, -je, -su, -ne* which can replace arguments in a structure. Butt (2004) maintains that these morphemes can also refer to adjuncts as well. She also maintains, in line with Akhtar (1999), Butt & King (2002), and Bhatia (1993), that case and agreement in Punjabi appear 'to work much as in Urdu', 'though an in-depth research into the case system remains to be done'(Butt, 2004, p. 3).

Identifying a big gap between UG/Minimalism and The Punjabi language, in some recent years Khan and Kausar (2019, 2021) have attempted minimalist studies of Punjabi in comparison to English. Their initial efforts are limited to a restricted set of data and concepts. For instance, Khan and Kausar (2019) provide a minimalist comparison of non-finite derivations in Punjabi and English. Their data consist of raising/passive and participial derivations which are supposed to contain defective T elements. This study extends the study of non-finite constructions to control infinitival derivations and their comparison to other types of non-finite derivations to render more comprehensive analysis of such constructions. Khan and Kausar (2021), with a very limited set of data as they focus on finite transitive derivations only, make an initial attempt to study case system in Punjabi in comparison to English. They seek to highlight some conceptual gaps in the existing accounts on comparison of ergative and nominative case system. This study extends the comparative analysis of ergative and nominative case patterns in Punjabi and English to intransitive (i.e., unaccusative, passive and unergative) structures and a different and detailed set of transitive structures where some problematic and yet unattended issues like the status of *–nuu* marking on object is addressed by seeking concrete evidence from data. In addition, a significant contribution of this study is comparison of k-expressions of Punjabi and wh-expressions of English which may shed light on the conceptual problems faced by both wh-systems (i.e., *wh-in-situ* and *wh-movement*).

A Critical review of existing works on both Punjabi and English grammar has helped this study in identifying some gaps in light of some recent developments in UG research. The very few studies on Punjabi conducted under UG paradigm haven't addressed many complex phenomena: adjunction, free word order, and *wh*-dependencies. Owing to their brevity, even the concepts explored by them need more detailed analysis. The other grammatical accounts of Punjabi, provided in a traditional grammar framework,may render fruitful insights into the syntactic structure of the language, but they could not satisfy all the three levels of adequacy: observational, descriptive, and explanatory as stipulated by Chomsky (in his several works). In a similar way the phenomena like adjunction and by-phrases in passives have posed equal challenges to languages like English. Furthermore, the existing accounts on comparison between nominative and ergative case has left some conceptual issues unanswered for which some solution needs to be explored. It is not very difficult to expect that a comparison of two languages, under recent developments of SMT and UG, would render beneficial results for finding satisfactory solution to some problems faced by both the languages in particular and UG in general.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter presents the research methodology, adopted for this study, in detail. Section 3.1 delineates the theoretical framework derived from Chomsky (2008); section 3.2 explains the research design and method adopted for this study; section 3.3 describes the research sample; section 3.4 explains the rationale for selecting the sample; section 3.5 provides the stepwise outline of the research procedure; section 3.6 provides the details of how data is analyzed in different stages; and section 3.7 summarizes the chapter.

3.1 Theoretical Framework

This study derives the methodological framework from Chomsky (2008) which marks a significant development in the way to achieving the goal of Strong Minimalist Thesis (SMT): Language is an optimal solution to the design specifications imposed by interface conditions. Chomsky (2008) builds on/modify his earlier works in Chomsky (2000, 2001a, 2001b, 2004) where the *phases* approach is introduced by assuming that the syntactic derivations complete in phases and spell out occurs at multiple stages upon completion of a particular phase level (i.e., C or *v**).

The following framework delineates the main tenet of Chomsky (2008) where the primary goal is summed up in the following words.

> The traditional concerns have to do with the properties that are specific to human language, that is, to the "faculty of language" FL. To borrow Jespersen's formulation eighty years ago, the goal is to unearth "the principles underlying the grammars of all languages" with the goal of "gaining a deeper insight into the innermost nature of human language and of human thought." The biolinguistic perspective views FL as an "organ of the body," one of the many subcomponents of an organism that interact in its normal life. From this

> perspective, the closest approximation to the informal notion "language" is a state of FL, an I-language.UG is the theory of the initial state of FL, virtually shared; in terms of traditional concerns, the theory of the distinguishing features of human language. (Chomsky, 2008, p. 1)

The three factors which take part in the development of such system are: (I) external data, (II) genetic endowment (the matter of concern for UG), and (III) principles of structural architecture and developmental constraints which are not specific to human language but rooted in general laws of nature. In the early days of the development of generative grammar and a biolinguistic perspective of language, it was unimaginable that factor (II) and (III) could take any part in the development of the system of language when under the assumptions of behavioral sciences, it was believed that language like other behaviors can be developed by association, conditioning, and induction. Under that approach only factor (I) was enough to develop language in human beings. According to Chomsky, it was possible to have such beliefs in the context of 18th century scientific naturalism, but today it is impossible to attribute language, a complex human endowment, to months of experience instead of evolution of thousand years (second factor) and principles of physical law (third factor).

Thus UG, as a theory of genetic endowment, must satisfy the condition of explanatory adequacy by providing a principled explanation of mapping of experience to I-language. An explanation of a property of language would be principled if it satisfies the conditions imposed on language by other organism internal systems which interact with language, and the third factor considerations. Language as a computational system meets the two systems: SM (Sensorimotor) and C-I(Conceptual Intentional). In this interaction, the conditions imposed upon language by these systems must be satisfied by language.

In methodological terms a principled explanation would consist of simple taxonomies and generative systems which should not be redundant. In a bio linguistic perspective, some methodological considerations as empirical hypothesis must be discoverable in other domains of nature. This leads to explanation beyond explanatory adequacy where we find principles of efficient computation which are applicable in other

domains and organism as they are present in language. This third factor explanation beyond explanatory adequacy would make UG a theory of natural science of language.

The introduction of Principles and Parameters (P&P) approach removed the conceptual barriers in the way to a principled explanation. In more refined form, the research under Minimalist Program has attempted to achieve a simple framework of UG. Adopting P&P approach, in the current framework Chomsky assumes that one aspect of parameter is the assembly of features into lexical items (LIs) which are *atoms* for further computation and locus of parameters. This reduction of parameter setting framework to assembly of features into LIs may remove many complicated issues; for instance, the need of extra module of grammar for every feature may be found redundant.

Strong Minimalist Thesis (SMT), which assumes that language is an optimal solution to the interface conditions that faculty of language must satisfy, has kept the minimalist framework forward towards a more and more principled explanation of FL. The far reaching SMT requires an understanding of interface conditions imposed by the two systems: SM and C-I which interact with language and put the expressions, generated by language, into use and interpretation respectively. If SMT is assumed to be a spot light, it would be easy to eliminate any redundant descriptive technology which is not required by an efficient computational system and the interface conditions. UG would be thus restricted to properties imposed by interface conditions and the task of a minimalist research would be interactive as it would explain nature of interfaces and principles of optimal computation.

As a way of understanding the contribution of the SM and C-I interfaces to the language design, it seems inevitable to assume that there is a basic asymmetry present. That is, the primary concern of FL must be to mapping to C-I interface while mapping to the SM interface as an ancillary requirement. This assumption is rooted in traditional conception that language primarily evolved as a means of expression of thought, development of cognitive thinking, and mental creation of possible worlds. Communicative needs participated as secondary factor in the evolution. If these traditional assumptions are accepted, it would be easy to propose that conditions imposed by C-I interface are of crucial importance while mapping to SM is an ancillary process. In

light of these proposals and assumptions, it is easy to speculate a situation wherein SMT would still be satisfied by the phonological systems which do not appear to observe the valid principle of efficient computation. It would now be easy to map to the SM interface those syntactic objects which are generated by the computation system which is well designed to satisfy C-I interface.

In the current framework, which is an attempt to satisfy SMT more closely than ever before in past, only two levels are inevitable: the interface levels (i.e., that access to SM and C-I systems). Being external to language and internal to organism, these systems have their properties independent to language. In EST/Y-model, three language internal levels, each with their distinct, properties were postulated: d-structure, s-structure, and LF. In a model consisting of five levels: two languages external and three language internal, it was supposed that each level is generated by separate cyclic/compositional operations. A number of levels generated by a number of cycles covering the same basic operation were highly redundant for the theory of UG. For achieving SMT, it was thus necessary that all internal levels must be eliminated and the technology is reduced to a single cycle as compared to many cycles operating in parallel but serving a single purpose. In light of a simpler model developed with lesser number of linguistic levels and only reduced to a single cycle (i.e., syntactic cycle). The following discussion reviews the elementary properties of this model.

Language is a system of discrete infinity which contains hierarchically organized objects. This system is assumed to be based on operation *Merge* which takes *n* syntactic objects SOs already formed and constructs from them new syntactic objects. Keeping in with SMT, the *n* is restricted to two because of limitations imposed by computational resources. The interface conditions also confirm this restriction. For instance, linearization at SM and argument-predicate structure at C-I are prominent such conditions. Thus, in line with the suggestions of Kayne (1981) Merge every time takes only two SO's to form a new SO.

A natural property of Merge is *no Tampering condition* (NTC) which holds that merge of two objects (i.e., X and Y) yields them unaffected. If by Merge of X and Y a set {X, Y} is obtained, this operation neither breaks X or Y nor adds any features to them.

Therefore, Merge always applies to the edge. NTC further leads to *inclusiveness condition* which eliminates any descriptive technology (i.e., bar levels, traces, indices etc.) during the course of derivation of expression. These devices may, however, be used for expository purposes without any active role in the derivation. A very significant question arises in the course of stipulating properties of Merge that whether linear order has any role to play in narrow syntax (i.e., in its mapping to C-I interface) or whether it is a concern of phonological component. In the current framework, Chomsky assumes the latter which in his view has guided a good deal of research after Reinhart (1979).

For an LI to enter into computation, it must have some property which is called its Edge Feature. An LI lacking EF would be considered a complete expression i.e., an interjection. EF, thus, makes LI's eligible for Merge which iterates unboundedly and ensures, as a result, that language is a recursive infinite system of a particular kind. Dependence on the operation Merge, as the sole operation of narrow syntax, which proceeds in one single cycle helps in abandoning a large amount of descriptive technology, which has been assumed to be of great purpose(e.g., the d and s-structures and LF levels, the distinction between N and –bar, and separate modules and grammatical relations like government etc.) In this way stipulation of Merge is an optimal assumption.

Merge has two types: Internal Merge and External Merge. If Y is merged to X, there are two possibilities: Y is part of X , Y is not part of X. The former type of merge is Internal Merge (IM) which covers the displacement phenomenon of language which has traditionally been labeled as Move. The latter type where Y is external to X is External Merge (EM). The two types of Merge interact differently with the interface levels. At phonetic interface, IM yields the displacement phenomenon. At Semantic interface, EM provides basic argument structure: θ-roles, cartographic hierarchies, etc. The IM provides discourse like properties: old information, specificity, and scopal effects. The relation between the two types is very close and current understanding removes the previous misconception about the different status of the two types.

In the earlier frameworks (e.g., Chomsky (2000)), it was considered that EM comes for free, but IM would require some extra stipulation and was an imperfection of language design, but the things now appear quite different. IM is a natural requirement of

human language: expressions are pronounced at one place and interpreted at another place as well. IM is no more a problematic operation; rather, its absence is problematic which requires an extra stipulation and thus is an imperfection. It may be covered under an empirical hypothesis that C-I incorporates dual semantics: Its one-part deals with generalized argument structure, and the other with discourse related aspects. To deal with the two semantic components in an optimal way language incorporates two types of Merge: EM and IM respectively. This is the optimal solution because it does not demand an extra device to capture dual semantics of C-I system.

After the conceptualization of Move as IM, we have two elementary operations that enter into narrow syntax: Merge (external and internal) and agree. Each generated SO enters into further computation. The label of the SO contains all the information which enables it to enter computation. The label selects and is selected in EM, and is a probe which seeks a goal for internal operation of SO: Agree and IM. The edge should be as close to probe as possible.

The restriction of computational system to the two basic operations Merge and Agree helps in reduction of grammatical relations. The minimal assumption yields only two relations: a) set-membership which is based on Merge and renders the terms *member of* and *dominate*. In the current framework, Chomsky accommodates only two relations finding no evidence of any role played by c-command at C-I interface. It has always been assumed that c-command relation plays a significant role in Binding Theory (BT); however, the conditions (A), (B), and (C) of BT can be captured under *probe-goal* (Agree) relation. Chomsky refers to Reuland (2001) to maintain that there are cases where c-command fails to capture condition (A). For this purpose, the most cruciual evidence comes from long distance agreement as in structures like "[H…..XP…..R], where H and XP agree, XP does not c-command R, and R is in the minimal search domain of the probe H". For instance, in the sentence: it became [[introduced a man] for R (self), *a man* does not c-command *R*, but both are goals of the same probe. "Reuland points out that…… in such cases the reflexive must have the bare form R, meaning it is in agreement (probe-goal) relationship with H, though not c-commanded by the antecedent XP" (Chomsky, 2008, p.8).There are a number of such cases where c-

command fails to capture condition (A) which may be covered instead by Agree (probe-goal) relation. From such empirical supports, Chomsky strengthens his argument that only inescapable relations are: set-membership and probe-goal (Agree).

In the current framework, Chomsky (2008) adopts a probe-goal mechanism where the probe enters into Agree operation with the goal which has some unvalued features. The search is blocked and intervention effect is induced when all the feature of goal are valued. In two-member probe-goal mechanism, which can be represented as [ϕ features-N], the intrinsic features of goal value the features of probe and value the structural case features of goal as determined by the probe. This case may be generalized to Multiple Agree mechanism where features of goal are matched with more than one element in a sequence. For instance, [probe-participle-N] sequence wherein goal values features of all matching elements (probe-participle), and if there is a need to raise the goal, it is would be raised, through any way, to the probe.

In the effort to reach closer to a simpler framework under SMT, the elimination of internal levels d-structure, s-structure, and LF and replacement of a redundant framework into a simplest iterated operation Merge also reduces several (i.e., three compositional) cycles into a single narrow syntactic cycle. It was assumed under EST/Y-model approach that different compositional cycles had to map expression from one level to the other. In the current understanding, it is assumed that a single compositional cycle proceeds on the bases of iterated Merge and at various stages there are transfer operations which in one instance hands the already constructed SO to the phonological component which maps it to SM interface (Spell-out); in the other instance, the SO is handed over to Semantic component which maps it to C-I interface. These SOs are called *phases*. The computation is now reduced to the compositional cycle which completes in phases. The phases are same for both the transfer operations. In Phases model, it is easy to assume that all operations are determined by phase levels (e.g., IM is driven by phase heads). The next due task is to determine the relevant phase levels.

A Phase Impenetrability Condition (PIC) strictly holds to preserve the cyclicity of computation. This condition ensures that as soon as the information is transferred to the interfaces, it should be forgotten; that is, as the derivation proceeds, it needs not to look

into previous phases. PIC crucially holds for mapping to the interfaces; however, its effect for narrow syntax is automatic. In narrow syntax, the probe into earlier phases is barred by intervention effects with one exception: the long distance Agree of T with the lower nominative object when subject is raised to undo the intervention effect.

Before proceeding to determine further properties of *phases*, it is important to determine what are the *phases*? Pursuing the suggestions in Chomsky (2004), in the current framework (Chomsky, 2008) he assumes that CP and *v**P are the phases. C is functional head which heads the left periphery region in terms of Rizzi (1997), and *v** (among the several choices of *v*) is the functional head which is linked with constructions with full argument structures: transitive and experience constructions. A significant problem arises, why should C be a phase head instead of T which *prima facie* appears to accumulate the ϕ-features which are responsible for agreement under probe-goal relations, raising of EA subject or unaccusative/passive objects to Spec-T position, and Tense features. The empirical evidence resolves the issue by confirming the fact that T only manifests these features which are derived from C. T possesses ϕ features and tense if it is selected by C, otherwise it lacks tense and complete set of ϕ features. When C-T agrees with a DP, the latter may sit *in-situ* under long distance Agree where all the unvalued features are valued, or it may raise to Spec-T, the point where it is inactivated with all the features valued, having no ability to raise further to Spec-C position. This entails a distinction between A and A'. There is enough empirical evidence that this distinction holds at C-I interface. If so, then there should be some mechanism to satisfy SMT. The inheritance of Cs features by T provide ample evidence. There is evidence that ϕ-features may appear morphologically on tenseless T and participles, as Iatridou (1998) provides evidence from Greek. This fact implies that these features are morphological realization of agreement having no effect on syntactic computation.

For identification of label of an SO, there are two proposals presented by Chomsky (2008):

(1) In {H, α} H an LI, H is the label.
(2) If α is internally merged to β to form {α, β}, the label of the β is the label of the new set.

How can an internally merged item α be identified with its copy but not with some other item with similar feature composition. For instance, how can the syntactically unrelated occurrence of John in *John killed John* be distinguished from *John was killed John* where two occurrences of John are two copies of the same lexical item. This information is the concern of C-I interface. The matter is automatically resolved, if it is assumed for satisfaction of Inclusiveness condition that each selection of an LI from lexicon is a separate entity, and all relevant occurrences are copies. Now only *phase* level memory is enough to identify these properties at C-I interface. It follows that all copies left behind in the case of IM can be handed over to C-I interface, without any problem, by virtue of NTC and IC. What about Phonological component? Two conflicting considerations enter into finding a satisfactory answer. (i) ease of processing and (ii) minimizing of computation. If (i) is preferred over (ii), all the copies will retain at the phonological component which is not possible, so the preference of (ii) over one confirms that language is so designed that mapping to C-I interface should approximate the SMT while utility for communication is a secondary factor.

Minimal computation requires that probe should search the goal in the smallest domain (i.e., the c-command domain of the probe). It eliminates the relevance of m-command and spec-head relations except for the situation where spec itself is the probe. This stipulation reduces the descriptive technology and makes it easy to assume that Spec-complement distinction can be reduced to first-Merge and second-Merge.

Defining minimal search in the case of XP-YP adjunction where neither XP not YP is the head, Chomsky (2008) maintains what he proposed in Chomsky (2004) where it is assumed that adjuncts enter into derivation as pair-Merge instead of set-Merge. This distinction covers the basic asymmetry of adjunction. However, at the time of transfer the pair-Merge is simplified to set-Merge to obtain linearization at phonological component and late insertion effect at C-I interface.

A good deal of the current framework is dedicated to wh-movement dependencies. Dealing with the case of subject Island, Chomsky (2008, pp. 12-14) compares the following structures (3-5) on the basis of base structure in (6).The analysis

of these structures has consequences for wh-movement/extraction to establish Chomsky's basic assumption that phase heads trigger the movement operations.

(3) (i) it was the CAR (not the TRUCK) of which [they found the (driver, picture)]

(ii) of which car did [they find the (driver, picture)?

(4) (i) *it was the CAR (not the TRUCK) of which [the (driver, picture) caused a scandal]

(ii) *of which car did [the (driver, picture) cause a scandal]

These are standard examples of the subject-island condition. The interesting case is (5):

(5) (i) it was the CAR (not the TRUCK) of which [the (driver, picture) was found]

(ii) of which car was [the (driver, picture) awarded a prize]

Structures in (5) approximates (3), not (4), though the surface subjects are in the same position as in (4). If so, then the effect is determined by the base structures of (5), not the surface structures, in which the distinction between the cases has been obliterated by raising of the surface subject from the verb phrase. The relevant base structures are (6):

(6) (i) C [T [v [V [the (driver, picture) of which]]]]

(ii) C [T [α [the (driver, picture) of which] [*v** [V XP]]]]

In (i),*v* is unaccusative/ passive, so only (ii) has internal phase α. Among other consequences of the analysis of (5), a stronger one is that C triggers both A and A' movement. T is unable to probe for the DP [the (driver, picture) of which] to raise it to Spec-T position by Agree probe until C is merged. As soon as C is merged, T inherits the Agree features for the phase head to trigger the operation derivatively. In parallel to this operation, the EF of C probe for wh-element resulting in its raising to Spec-C position. It strengthens the already established conclusion that TP is not the phase; its phase-like properties are derivative from CP: the actual *phase*.

In the current mechanism, C has two features: First is EF feature which attracts *wh-phrase* and the Agree-feature (ϕ feature) which attracts DP, but not higher than T with which the DP agrees. The mechanism behind this duality of features is that T derives Agree features from C to become the probe at the CP phase level. This mechanism is motivated by the requirement of semantic duality at C-I interface level which needs to be optimally satisfied by A-A' distinction. The A-A' distinction, motivated by semantic duality, has other significant empirical consequences which hold generally for all w*h-questions*. This can be elaborated through the structures (7) and (8) (equivalent to structure (10) and (11), respectively, in Chomsky (2008, p. 15)).

(7) a) C[T[who *v**[see John]]]

b) who_i [C[who_j T[who_k *v**[see John]]]

c) Who saw John?

(8) a) C [T[v[arrive who]]]

b) who [C[who[T[*v*[arrive who]]]]]

c) Who arrived?

The mechanism of obtaining (b) derivations from (a) derivations in (7) and (8) is helpful in clarifying the A-A' distinction. In (7), the EF of C attract the goal in Spec-*v** position directly forming a visible A'-A chain. The Agree features of C, inherited by T, attract the argument to Spec-T position forming an invisible who_j copy of the argument. There are two argument chains obtained in this procedure: (who_j , who_k) and ($who_{k)}$. It is important to note that who_i is directly linked to who_k but not who_j. A similar mechanism yield (b) from (a) in (8). It is obvious that in this mechanism the traditional approach that wh-element is raised to Spec-T position and then raised to Spec-C position forming a uniform A-A chain and a non-uniform A'-A chain resulted by the successive cyclic movement of wh first to Spec-T position and then to Spec-C position is eliminated. There is no non uniform chain. There is just one argument chain and an operator argument construction. The EF of C seeks a goal, as evident in (7) and (8), to Spec-C position, and Agree features of C, inherited by T, seek the argument to Spec-T position. The latter leaves an unpronounced copy like $who_{j.}$ Thus, the wh- does not move to Spec-C position from Spec-T, rather directly from Spec-*v** to Spec-C position by virtue of semantic

duality at C-I interface level. A general principle which follows is that an A chain becomes inactive when its un-interpretable features are valued. This captures the inactivity phenomenon of the earlier works.

In light of the current A-A' distinction, it is easy to redefine the A and A' notion on the basis of a phases approach. The A' position is one which is attracted by the EF of a phase head: Spec-C or outer Spec-*v**. This redefinition has further consequences. It leads to assume that the A and A' distinction is not based on the structural status of these positions in a phrase marker, but by the manner in which they are derived. Moreover, it also helps in assuming that the successive cyclic A' movement forms A' chains, and this process is not affected by the intermediate landing sites which do not impose any binding effects and other A- properties. The A and A' chains distinction, thus, depends upon the manner of derivation not on the structural status of the position.

The definition of A and A' chains on the basis of manner of derivation helps in stipulating the properties of IM. If all operations are driven by phase heads, it is the characteristic of A-chains that features are not valued until operation is complete otherwise operation would not be possible. The only A-chains are complete A-chains. This helps in generalizing the properties of IM. If, supposedly, H is the phase head which selects Hs, the A' movement is possible if the EF of H extracts an XP from its base position not from the Spec- Hs position. If Agree features of Hs extract XP from its base position to Spec Hs, it would form A-chain impenetrable for the edge feature of H which could not raise it further. If by the force of EF, the XP is raised to H, it no longer remains an A–chain and its extraction would be equal to extraction of XP form external argument position carrying the cost of search into a phase already passed.

From above elaboration, it is easy to conclude about probe-goal relation that the edge and the Agree features may be applied in either order or simultaneously. What is applicable to wh-movement, should be applicable to other types of A' movement (e.g., topicalisation). There is no need to stipulate any un-interpretable feature which induces A' movement. If it is supposed that a moved wh-phrase has interpretable interrogative features, the moved phase will have to move to right position in the left periphery or have

to associate to a certain position by some other operation otherwise the expression will crash at C-I interface level. In a similar way if a moved wh-phrase lacking interpretable interrogative features or an empty operator moves the resulting structure may converge but will have no interpretation until the phrase moves A' movement to the root.

With respect to the intervention effects, A' chains function in similar manner to A chains. This can be illustrated through (9) which is the schematic description of "Who did John see?" (equivalent to (15) in Chomsky, 2008, p. 18).

(9) C[T[John *v**[see who]]]

In (9), *who* raises to the outer Spec-*v** to maintain PIC. As the derivation reaches the next phase level, the EF of C seeks and raises *who* to Spec-C position and the Agree features of C inherited by T seeks and raises the subject *John* to Spec-T position. The two operations are applied in parallel. The uniform A' chain behaves like A chain as the argument *John* moves over the lower copy of *who* which does not induce any intervention effect. Like A-chains, this fact is also applicable to A' chains that only the head of chains induce intervention effect. The conclusion is that there are either uniform A chains or uniform A' chains, but no mixed chains.

Some more complicated cases are dative or ergative subject constructions which require long distance T-nominative agreement between T and the object. To illustrate the similar A-A' bar phenomenon, schematic representation (10) may be analyzed as an example of such cases.

(10) C[T[Dat [*v** Nom]]]

Different possibilities need to be analyzed to reach a consolidated conclusion. If Dat remains *in-situ,* it induces blocking between T-nom agreement. If it moves to Spec-T position, there is no intervention effect and T-Nom agreement is possible. A problem arises if Dat is a wh-moved and induces intervention effect at its base position (i.e., Spec-*v**), it is against the basic principle: only head of A chains can induce intervention effect. There are two solutions possible. One is suggested by Holmberg and Hroarsdottir (2003) that Dative subjects move directly to Spec-C position forming A' chain. In this manner,

only the base position is left for the only A chain to induce the intervention effect. Chomsky (2008) achieves the required results by assuming a well-established claim that both A and A' movement operations are motivated by C. In the mechanism obtained from this motivation, Spec-C has same relationship with the two chains (Spec-*v** obtained by EF of C) and (Spec T and Spec *v** obtained by Agree features of C). There is no need to stipulate any relation between Spec-C and Spec-T. Spec-C has one type of relation with the two argument chains: operator-argument relation. As this study includes a split ergative language i.e., Punjabi, the two possible solutions provided by Holmberg and Hroarsdottir (2003) and Chomsky (2008) are very significant for stipulating a mechanism of wh-dependencies in a complicated situation of ergative or dative subjects in such languages.

3.2 Research Design

This is an exploratory study which utilizes qualitative method of data analysis. Its primary aim is to describe how the C_{HL} of the two languages Punjabi and English obtain grammatical CPs which are convergent at the interfaces: C-I and SM by virtue of fulfilling the conditions imposed by these interfaces. The rationale for selecting the exploratory research design lies in the fact that there are phenomena for which no satisfactory account exists in the current lot of UG research (e.g., the dissociation of adjuncts from their initial Merge position, the status English *by-phrases* in passives and free word order in Punjabi). Such phenomena need an exploratory research design where the answer to why questions have to be explored instead of just describing the facts. The reason of adopting qualitative method of analysis is intrinsic in UG framework where for reaching an adequate solution about a particular phenomenon, it is not required that it is distributed to a considerably wide range of data, but a little occurrence of an evidence, if it is conceptually supported, is enough to maintain a fact not only about a particular language, which is under study, but is adequate to be a starting point for other studies as well.

3.3 Sample of the Study

The sample for this study consists of the sentence equivalent CPs (i.e., the clausal units) which include two phase levels: *v**P and CP or at least the higher strong phase

level C in the case of intransitive (i.e., unaccusative/passive derivations). The CPs are selected from authentic sources of grammars of both languages. Punjabi sample is collected from Shah (2015), Bhatia (1993), and Bhardawaj (1995); English sample is gathered from Collins and Hollo (2000), Swan and Walter (2003), and Radford (2004). For Punjabi, the major source remains Shah (2015) and Bhatia (1993) and for English Radford (2004) contributes most to the sample. In line with the practice of UG research, the sample may consist of some ungrammatical structures to sort out the reasons for their non-convergence as derivations. However, these structures are complete CPs in any respect. In line with Chomsky's practice in post-2000 research (since the introduction of *phases* approach), this study represents the derivation of structures in the form of set configurations as shown in (1) below.

(1) CP [TP[*v**/vP[VP]]]

In order to cope with the problems of representing the derivations of Punjabi structures where the complement precedes the head in linear order, this study separates one phrase from the other by a (-) symbol as demonstrated in set configuration (2) below where (-) separates the post-positioned heads *v** and T from their relevant phases VP and *v**P respectively.

(2) CP [TP [*v**P-[VP]-*v**]-T]

3.4 Rationale for the Sample

The rationale for selecting CP as a maximal unit of sample for this study lies in that a derivation minimally completes in two phases (i.e., *v**P and CP) (Chomsky 2004, 2008) where the former (lower) phase is evaluated at the latter (higher) phase level which is higher in derivational hierarchy. A derivation converges if the material transferred to the interfaces: SM and C-I is interpretable at these interfaces. The phase levels are determined according to the requirements at the interface levels as the phase level *v* contains a complete propositional content with complete argument structure where θ-roles are assigned and aspects like transitivity and specificity are governed; higher to it, the C phase level (i.e., left periphery in terms of Rizzi, 1997) contains aspect like tense and force of a clause. A complete clausal unit obligatorily contains the higher phase level

CP while the phase level headed by *v** is present only in transitive and experiencer derivations. The unaccusative and passives lack the *v**P level. Hence, the unit of analysis is CP.

In a recent survey of Punjabi language in *The Oxfrod Handbook of Ergativity*, Butt (2017) mentions Bhatia (1993) as a standard grammar of the language. This study endorses Butt's claim as Bhatia provides a very wide range of data which is helpful in studying some very complex phenomena (e.g., the movement of k-elements in the Punjabi k-questions and reduplications) in more detail.

A problem that remained after selecting Bhatia's grammar was that Punjabi had two capitals in the world: the Punjab of Pakistan and the Punjab of India. Selecting a grammar by a native Punjabi Indian Bhatia was insufficient in light of this fact. For this reason, a recent grammar from Shah (2015) is selected. His grammar is among a very few efforts of standardizing the language in Pakistan where lives the biggest population of Punjabis in the world-more than 70 million according to the survey of Shackle (2017). However, owing to the fact that standardization of Punjabi was never given the due heed, Shah's grammar could not be compared to Bhatia (1993) who covers a wide range of complicated data.

After selecting two authentic sources of Punjabi grammar each from a Pakistani and an Indian native Punjabi speaker, the problem was that grammars attempting to provide a standard code of language might not accommodate the variation of grammatical forms caused by some spoken aspects. To bridge this gap Bhardwaj's (1995) well designed course on spoken Punjabi was selected as a third source. Bhardawaj provides well formed dialogues for new learners of The Punjabi language. This study selects complete grammatical units from his work.

For English part of the sample, the major contribution comes from workbook section of Radford (2004) who provides an introduction to English Syntax under a UG approach. The rationale for this selection lies in that traditional grammars usually don't consider some complex structures which are very much needed in a UG research. It has been a hallmark of UG research that it attempts to study complex structures exhibiting

relatively complex phenomena as ECM, Raising and Control, Adjunction, and wh-dependencies etc. The workbook section of Radford provides a good range of syntactic structures for studying a good range of phenomenon.

As an authentic modern source, Swan and Walter (2003) provide a good grammar course for new learners of English language that covers both written and spoken aspects of the language. Based on the level of authenticity they achieve, their work comprises the second source of English sample. The third source of English sample is Collins and Hollo's (2000) *English Grammar: An Introduction* which is written an E-language approach according to the broader distinction used by Chomsky (1995). The three sources selected for gathering English sample ensures that structures are gathered from linguistic sources which rely intuitions of three different approaches to grammar in obtaining the grammatical structures.

3.5 Research Procedure

This section provides step wise details of the procedure adopted for this study. At the first step, this study identifies some particular and some general problems in the existing account of the research conducted under UG paradigm. A particular problem is that a very few efforts have yet been attempted for providing a minimalist account of derivation of syntactic structures in The Punjabi language which is one among the most widely spoken languages of the world. This study also identifies some conceptual problems in the existing accounts on ergativity. It also finds that no satisfactory solution has been provided for some general phenomena like adjunction, free word order, and wh-dependencies in apparently wh-in-situ languages.

At second step, this research sets its aims and objectives which primarily focus on filling the gaps identified in the first step. The primary objective of this study is to compare the mechanism of obtaining convergent CPs in the two languages Punjabi and English with a particular focus on feature valuation mechanism in the ergative and nominative contexts exhibited by the two languages respectively. This study also aims to providing a framework for the phenomenon which has not yet received a satisfactory solution: adjunction, free word order, and wh-dependencies.

At the third step, theoretical framework for this study is borrowed from Chomsky (2008) who attempts to provide some solutions to SMT. His framework is based on *phases* approach which started within MP in Chomsky (2000). Of crucial importance is the mechanism of valuation of the features which are un-interpretable at C-I interface. The derivation is supposed to complete in phases headed by the functional heads C and *v**. Upon the completion, a *phase* is spelled out to the C-I and SM interfaces.

At the fourth step, the research sample is collected from authentic grammar sources of both languages. The sources are decided on the basis of authenticity and provision of a wide range of sentences that cover the grammatical phenomena extensively. In case of Punjabi grammars are selected from the native speakers of both Pakistan and India which constitute the Punjabi capital of the world. The procedure of data analysis is delineated in the section 3.6 below.

3.6 Data Analysis Procedure

First of all, the data collected from different sources is divided into five different categories either on the basis of containing a particular type of some functional category (i.e., $v_{def,}$ *v**, and T_{def}) or on the basis of exhibiting a particular phenomenon (i.e., Adjunction or wh/k-movement). Secondly, the Punjabi data is transliterated in English for achieving a uniformity of analysis. Thirdly, the selected structures from the sample, for which the detail derivational procedure is to be described, are schematically described in the form of set configurations demonstrated in (1) and (2) of section 3.3.The symbols are majorly adopted from Chomsky (2008): C, complemetiser; T, tense; v/*v** light verb; V, main verb; N, noun; D, determiner; and P preposition. The relevant phrases of these categories are represented by adding a P to their basic symbol. Some devices are also used just for expository purposes; for instance, a lower copy of some raised element is represented in the original Merge position as: ~~copy,~~ the indices are also used to represent the multiple occurrences of a particular category (e.g., who_i, who_j. who_k etc.). For accommodating Punjabi post positions in the complement-head linear order a (-) is used.

After representing the data, a rigorous analysis is conducted under the minimalist framework derived from Chomsky (2008). The analysis is conducted under the following five stages.

At the first stage, the smallest CPs in terms of number of arguments i.e., unaccusative/passive and unergative structures are taken for analysis. The common aspect among these structures is that they do not contain a transitive light verb *v** which has a complete set of ϕ features. They have either no light verb, as evident in the case of English unaccusatives and passives, or they have a light *v* with incomplete set of ϕ features. In such derivations, the crucial focus was laid on the difference in the mechanism of obtaining the unergative CPs of the two languages because of the presence of a quirky ergative case on the subject of Punjabi unergative derivations. The comparative study of unergative derivations in the two languages play a crucial role in exploring the source of ergative case and determining the difference between the mechanism of ergative and nominative case marking.

At the second stage, the transitive/ experiencer derivations are taken for analysis which contain a *v** functional category (i.e., the type of *v* with complete set of ϕ-features). Such derivations provide comprehensive empirical evidence for reaching a satisfactory conclusion about the source of ergative case and difference in the mechanism of ergative and nominative case assignment patters. At this stage, the findings of the stage one of analysis may be refined or strengthened. A particular focus at this stage is laid on the case of DO in transitive Punjabi derivations with ergative subject i.e., an issue not adequately dealt with in the existing accounts on the ergative derivations.

At the third stage, the derivations containing T_{def} elements are taken for analysis. They are passed through the Multiple Agree framework of Chomsky (2008) wherein the incomplete set of un-interpretable features of some categories (i.e., passive participles, adjectival, non-finite Ts etc.) are valued in a sequence operation between a probe and goal with complete set of un-interpretable features. It is particularly focused at this stage that what difference of derivational procedure is

obtained in the case of different derivations which contain non-finite T elements: control, raising, ECM, and passive participial derivations.

At the fourth stage, the derivations involving adjunction phenomenon are analyzed to find out a conceptual solution to the problem of dissociation of adjuncts from their initial Merge position. This stage is very crucial as it attempts to analyze data with the aim to resolve some other adjunction related issues like free movement/scrambling of constituents: a phenomenon very hard to accommodate in the derivational procedure C_{HL} of language. Particularly, the freedom of word order witnessed in the case of Punjabi derivations has not been dealt with in the literature.

At the fifth stage, the wh/k derivations of the two languages are comparatively studied to find out the characterization of some general aspects about wh/k-features and some language particular aspects e.g., which type of wh-expressions can be extracted in English and which cannot be. A very significant and unresolved issue: to determine the status of the Punjabi k-expressions either as moving or *in-situ* elements is especially concentrated.

The wh-movement phenomenon has posed two major problems for the researchers of syntax. First problem is to determine what motivates a wh-expression to move if it moves at all in a language. This is related to the languages exhibiting wh-movement e.g., English in which the wh-expressions undergo A' movement by first moving to the Spec-*v** and then to the Spec-C position. The second problem is related to the languages where wh-expressions remain in-situ (e.g., Punjabi) where the k-expressions exhibit wh-in-situ behavior in most of the cases. In case of the movement of a k-expression it needs to be determined whether it is wh-movement or the usual movement of any constituent. Some recent studies assume about wh-in-situ languages that their wh-expressions move to Spec-*v**; however, the k-expressions in languages like Punjabi move so freely that their restriction to positions like Spec-*v** and Spec-C seems problematic and it appears even more problematic to assign the status of wh-movement to such movement. On basis of the comparison of two languages, a wh-movement language (English) and a wh-in-situ language (Punjabi), this study attempts to contribute a satisfactory solution to these problems.

3.7 Summary

This chapter presented the research methodology adopted for this research. Section 3.1 delineates the theoretical framework adopted from Chomsky (2008); section 3.2 explains how the rational of utilizing exploratory research design and qualitative research method for this study lies intrinsically in UG research; section 3.3 describes that the sample for this study consists of sentence equivalent CPs (i.e., complete clausal units) taken from authentic grammar sources of the two languages; section 3.4 explains the rationale for selecting the sample; section 3.5 explains the overall research procedure; section 3.6 explains the data analysis procedure; and section 3.7 summarizes the chapter.

CHAPTER 4
DATA ANALYSIS

This chapter presents the comparative analysis of the derivational procedure required for obtaining sentence equivalent CPs (i.e., complete clausal units) in Punjabi and English. The chapter is divided into five different sections which deal with the analysis of five different types of the data: section 4.1 presents the analysis of the intransitive v_{def} derivations (i.e., unaccusative/passive and unergative structures); section 4.2 describes the analysis of the *v** derivations (i.e., the transitive and experiencer structures which contain a *v** element); section 4.3 deals with the analysis of non-finite T_{def} derivations (i.e., the structures which contain non-finite T elements); section 4.4 attempts to explore some satisfactory mechanism to adjust the dissociation of adjuncts and the unusual free movement of elements into the derivational procedure of narrow syntax; and section 4.5 provides the comparative analysis of English wh-questions and Punjabi k-questions. At the end of each section, a detailed discussion is conducted to compare the findings of this study with other studies for maintaining how this study addresses the problems faced by previous studies with the help of empirical evidence provided by the data.

4.1 Intransitive v_{def} Derivations

Intransitive CPs are the simplest structures in terms of number of arguments, but the mechanism which derives them has empirical and conceptual clues for solving problems posed by more complex and bigger structures. Broadly, intransitive clauses can be divided into two types: unergative and unaccusative. They share a property of possessing only one argument; however, they differ in that in the former type the sole argument (i.e., External Argument (EA)) is merged as subject at Spec-*v*P position taking verb as complement while in the latter type the sole argument (i.e., Internal Argument (IA)) is merged as object: the complement of VP. Stipulating an initial minimalist framework for intransitive CPs, Chomsky (1995b) follows Hale and Keyser (1993a) who

highlight the proximity between unergatives and transitives in possessing a *v*P shell which the unaccusatives lack. Thus, the difference in unergative and unaccusative CPs can be represented in the form of the set configurations (1) and (2) respectively.

(1) $_{CP}$ [$_{TP}$ [Sub $_{vP}$ [*v* V]]]

(2) $_{CP}$ [$_{TP}$ [T $_{VP}$[V Obj]]]

The schematic configuration (1) represents canonical unergative derivations where the sole argument is merged at Spec-*v*P position while the configuration (2) represents the unaccusative derivations where the sole argument is merged with the main verb as its complement to form the VP. As far as unaccusatives are concerned, the configuration (2), which lacks a *v*P shell, may be modified in light of Chomsky's latter proposals (2000, 2001) where only The v^*/v_{comp} may enter into a feature checking relation with an argument resulting in assignment of case. Having incomplete set of ϕ-features (phi-features), a v_{def} may not value structural case features to any argument which checks its un-interpretable features by the Agree operation. There are languages like Punjabi where the unaccusative structures contain a light verb as in *O puch gya si* (He had reached) (structure (14) in the following discussion) *gya* (from the root *to go*) is the light verb; however, it is easy to foresee that possessing a v_{def} element the accusative case is, in any way, impossible in unaccusative derivations.

In light of the modified mechanism, it may be assumed that in an unaccusative derivation the obj NP, which merges as the IA complement of the VP, enters into Agree relation with T resulting in nominative case value on the obj. The obj undergoes the composite operation Internal Merge by moving to Spec-T position to satisfy the EPP features of T. Thus, the composite operation Internal Merge (equivalent of *Move* operation as stipulated in Chomsky (2000)) is induced inevitably in such derivations to obtain the surface word order where the obj is raised to subj position. The English unaccusative derivation (3) can be a good starting point for analyzing simplest clause structures in the minimalist framework where the structures are obtained by the *Merge* of two elements and the simple operations *Merge* and *Agree* precede the more complex operation *Internal Merge =Move*.

(3) $_{CP}$ [$_{TP}$ [We$_{k}$ $_{T}$ have $_{VP}$ [arrived t_k]]]

In (3), the computational procedure L selects the two elements from the Lexical Array selected for this particular derivation. Thus, the elements *arrive* and *we* are merged to form the VP. The phase level *v* is missing as the construction consists of an unaccusative verb. There is no *v* with which the sole argument *we* can enter into Agree relation to check the ϕ features. So, the VP is merged with T to from the TP. The T enters into the derivation with un-interpretable ϕ features which should be valued if the derivation has to converge according to the theoretical framework adopted in Chomsky (2008) (discussed in detail in section 3.1 of chapter 3). The ϕ features of T become a *probe* to search for an active *goal* (i.e., an NP which may check the ϕ feature of T and value the structural case features in the same operation). The only nearby element is the argument *we* which enters into Agree operation with T. In this operation, the unvalued ϕ features of the T *probe* are valued and the structural case features of the goal *we* are valued as nominative. T itself is not the phase level as it derives its Agree and Tense features from C. In addition to Agree and Tense features T also possesses the EPP features which are satisfied by the IM of the IA *we* to Spec- T position. The valuation of all unvalued features and satisfaction of EPP features enables the derivation to converge at the interface levels.

(4) The motorway will be closed for three days. (Swan & Walter, 2003, p. 96)

(5) CP [TP [The motorway $_{T}$ will $_{VP}$ [<be closed $_{DP/obj}$ the motorway $_{PP}$ for three days>]

The passive structures exhibit a mechanism of derivation closer to unaccusative structures. The derivation (4), schematically described in (5), is a passive structure, so it also lacks a *v* element that could value the structural case features of some NP as accusative. Both types of structures lack agentive EA: the thematic subj which are present in unergative and transitive structures. Apart from passivity, (4) is obtained by a mechanism similar to (3). The VP is formed by the Merge of the complex verb *be closed* (the *-ed* suffix is attached to the root form *close* by a lowering operation affix-hoping which may appear a violation of No Tampering Condition at first sight; however, as this operation takes place only at PF component (Radford, 2004, p. 66), no violation of the condition occurs) and IA *the motorway*. The adverbial PP *for three days* is merged to the

VP by a pair Merge (i.e., the mechanism of Merge stipulated by Chomsky (2001b), also maintained in Chomsky (2008), for adjuncts: the phenomenon explored comprehensively in section 4.4). Further in derivation (4), the VP merges with the T *will* to form TP which merges with C to from CP. After the merge of C to the derivation, the T derives Agree features from the C which enter into the derivation unvalued. The ϕ features of T probe for the nearest NP goal in its domains to Agree for feature valuation. In this search, the T *probe* agrees with the DP *the motorway* valuing the unvalued ϕ features of the *probe* and structural case features of the *goal* as nominative. This DP undergoes IM to satisfy the EPP features of T. Hence, the convergent passive derivation (4) is obtained. It is found that passives are parallel to unaccusatives in ϕ and case features valuation mechanism in that both lack an accusative case assigning functional head (i.e., *v*).

Passives are parallel to unaccusatives in some ways, but there are some differences which worth discussion here. Radford (2004) mentions four ways in which passives differ from their active counterparts: Firstly, passive sentences require an auxiliary *be*; secondly, the main verb in passive sentences is in passive participle form (seen/stolen/taken) which is homophonous, despite of being different, to perfect participle form of active sentences; thirdly, passive structures may contain (though it is not obligatory) a by-phrase; fourthly, the complement of active verb surfaces as subject of the passive structures. All these features can be observed in the structures (6) and (7) below.

(6)

a. Hundreds of passers-by saw the attack
b. The attack was seen by hundreds of passers-by

(7)

a. Lex Luthor stole the kryptonite
b. The kryptonite was *stolen* by Lex Luthor

In the (b) structures of (6) and (7), the presence of auxiliary *be* (was); the passive participle form of verbs *seen* and *stolen*; the raising of the complements of the main verbs (i.e., *the attack* and *the kryptonite*) of the active clauses to the surface subject position in passive clauses; and the demotion of subject in the *by-phrases* can be observed. There are different views about derivation of passive structures with respect to the status of

auxiliary *be*, passive participle verb form containing participle element–*en*, and the *by-phrase* in such derivations. The contradictory views emerge from the attempts made for resolving the problems posed by case marking and θ-role assignment in passive derivations.

Jaeggli (1986) adopts a θ-role transmission approach to resolve the problematic issue of the θ-role assignment to the complement of *by-phrase*. In such procedure, first the passive suffix *–en,* which is supposed to assume the status of EA, absorbs the external θ-role of the main verb. The *–en* passes the θ-role to the PP where the role percolates to the preposition *by* which assigns the external θ-role to its complement. On first sight, the transmission approach appears a violation of UTAH.

Collins (2005) views Jaeggli's proposal problematic in that it is not in line with the Minimalist Program where θ-role assignment is configurational: each syntactic position (e.g., Spec-vP, complement of V) is associated with a particular θ-role. To cope with this problem, Collins proposes that the external θ-role in passives should be assigned in exactly the same way as external θ-role in active. Following are the crucial stipulations for derivation of passive structures in his framework: the EA is merged in passives at the same position (i.e., Spec-*v*) at which they are merged in active derivations; there is no difference in past participle and passive participle verb forms in English; the participle morpheme *–en* heads a participle phrase PartP which takes a VP complement from where the V is raised and adjoined to PartP obtaining participle form; PartP is dominated by *v*P which is the complement of *v*P; there is a voice phrase VoiceP present in passive derivation which takes a *v*P complement; The voiceP is headed by *by* which takes the *v*P complement wherein the DP is merged at Spec- *v*P position; In passive derivations, case assignment and θ-role are dissociated from *v* which is assumed to assign only θ-role to the EA DP; In derivations with VoiceP, the accusative case is assigned to the EA DP by the VoiceP head *by*; the auxiliary verb *be* is merged as V in the derivation which takes a VoiceP complement; Inf is merged to the VP to from IP; The PartP moves to Spec-VoiceP form where the DP, which was earlier raised from complement of PartP to Spec-PartP, is raised to Spec-IP position to obtain the surface order of the passives. The mechanism of obtaining the derivation in such a way can be seen in (9) = Figure 13

below which shows how the passive derivation (8) may be obtained. With the course of development of his argument, Collins (2005) assumes that *by* is the head of Voice P which takes *v*P complement. This modification as shown in 9 (b) may be incorporated in 9 (a) for understanding Collins' conclusion about passive derivations.

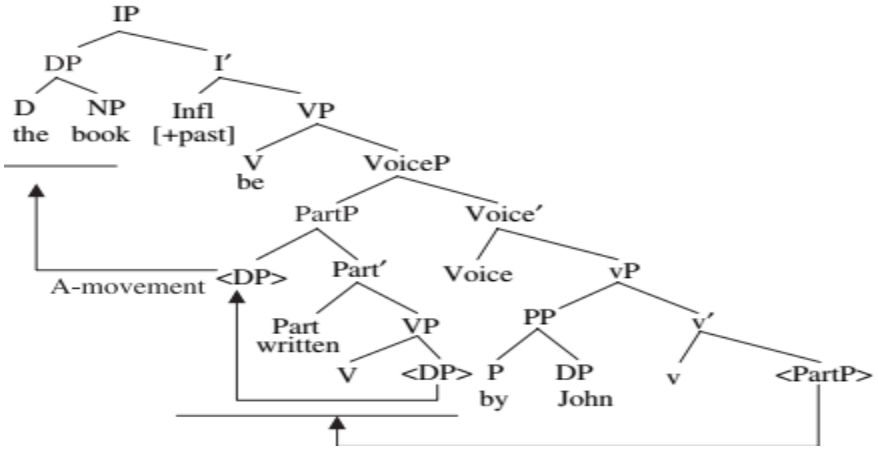
(8) The book was written by John.

(9)

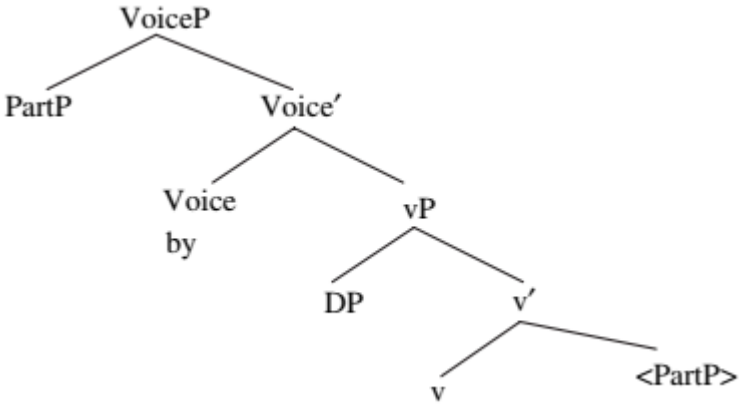
Figure 14

Analysis of Passive Structures According to Collins (2005)

a.



b.



As shown in 9 (a) and (b), the passive structure (8) can be obtained by the following procedure. The DP *the book* merges with the VP *write* to form VP which

merges with the Participle head–*en* to form PartP. The V is adjoined to –*en* after raising to obtain the participle *written*. The PartP merges with *v* to from *v*P which merges with DP *John* (headed by a null D) at spec- *v* position. This *v* is merged with Voice head *by*, which is completely devoid of interpretable features, to form VoiceP. The VoiceP is merged with auxiliary V *be* to form VP which merges with Inf to form IP. The whole PartP moves to Spec-VoiceP position by XP movement operation. The internal DP *the book*, first raised to Spec-PartP position and then moves to Spec-IP. This DP is assigned nominative case from the functional head I. Collins finds similarity between active and passive derivations by assuming the merge of EA *John,* instead of PP *by John,* at Spec- *v* position in *v*P (the same position where EAs are merged in active derivations). The EA is assigned θ-role by *v*; however, the case is dissociated from *v* and transferred to *by* which is supposed to assign accusative case to the EA. In this way, Collins attempts to accommodate the merge of EA in same position in both active and passive derivations.

Collins' (2005) proposal is problematic in many ways. For assuming a similarity between the past participle and passive participle verb form, it is assumed that the participle from is licensed in two ways: It is licensed either by auxiliary have (in case of active derivations) or by presence of a Voice P (in case of passive derivations). This can be seen in 10 (a) and (b) below.

(10)

a. John has seen the book. (active, no voice P)
b. The book was seen by Mary. (Passive, voice P present)

The first conceptual problem arises from assuming an equivalent status for past and passive participles but different status for their auxiliaries. If active and passive contain similar participle forms, why don't their auxiliaries have similar status? If in active structures the auxiliary *have* can license participle form *seen*, why can't the auxiliary *be* license the same participle form *seen* in passive derivations. The issue may be resolved in two ways: either by assuming different status for the participles or by assuming a similar status for the auxiliaries (if the participles need to be assumed similar).

The second problem emerges with respect to the status of *by- phrase* in passive derivations. Collins assumes that *by* enters into derivation with complete un-interpretable features as it heads a VoiceP instead of a PP *by John.* The problem starts here if analyzed in light of MP which makes it rather impossible to assume that a functional head completely devoid of un-interpretable features may assign/check case of some nominal. Radford (2004) stipulates Accusative Case Assignment Condition which says: "A transitive head assigns accusative case to a noun or pronoun expression which it c-commands" (Radford, 2004, p.74). This stipulation appears in line with MP where accusative is assigned by *v* to the IA. The dissociation of accusative case from *v* and its association to a functional head *by* of Voice P seems problematic on the basis that *by* has no interpretable features which can enable it to check the case features of some nominal. However, in light of Accusative Case Assignment Condition the absence of accusative case in passives may only be maintained if data provides evidence that they are not transitive. Such evidence can be seen in structures (11) and (12) below.

(11)

a. *No evidence of any corruption* was found

b. There was found *no evidence of any corruption*.

(12)

a. *A significant change of policy* has been announced

b. There has been announced *a significant change of policy.*

(Radford, 2004, p. 134)

Structures in (11) and (12) pose problem for Collins' (2005) assumption about the merge of EA at the similar position in both passive and active structures. The structures (b) in (11) and (12) strengthen the unaccusative nature of passives. If it were assumed, in line with Collins, that the EA is merged at same position in passive and active derivations and passive contains a Voice P headed by *by*, it would be impossible to obtain grammatical passive derivations (b) which contain expletive subjects. The (b) structures further strengthen that passive structures lack a *v** which may assign external θ-role to EA and check accusative case of some nominal. On conceptual grounds the analysis of (a) structures in (11) and (12) also make it hard to accept Collins' proposal. There is no

by-phrase present in these structures. The transitive structures which allow the merge of EA at Spec-*v** position does not allow the drop of EA in English in finite clauses. The obligatory overt presence of EA in English transitive structures leads to doubt the merge of the EA in passives by a similar mechanism because data provides widespread evidence of the constructions like (11) and (12) where grammatical derivations may be obtained without any EA at all. In light of such evidence, this study assumes that passives are near to unaccusatives in argument structure (apart from other differences which are not relevant here) as they lack a *v** which could assign accusative case and external θ-role to some nominal.

(13)

a. No evidence of any corruption was found by police.
b. No evidence of any corruption was found.
c. Police found no evidence of corruption.
d. *found no evidence of corruption.

Structures in (13) help in assuming contra Collins (2005) that the status of EA *police* in active derivation (c) and the complement of *by-phrase police* in passive derivation (a) is not similar owing to the fact that the *by-phrase* is easily eliminable from (a) to obtain a grammatical passive structure (b) while the elimination of EA in (c) results in ungrammatical derivation (d). The non-obligatory nature of *by-phrase* leads this study to assume that the merge of *by-phrase* may not be accommodated in canonical argument structure of active transitive clauses where EA is not eliminable. The eliminability of *by-phrase* helps this study in assuming that the *by-phrases* in passives are PP adjuncts which are merged to derivations as pair merge (The phenomenon of merge of adjuncts is dealt with in detail in section 4.4 of this chapter). The data provides no evidence of dropping arguments in finite transitive active clauses as shown in structure (d) in 13. The assumption of *by-phrase* as adjuncts helps in resolving the problem of demotion of subjects of active clauses in passive structures to obtain the usual word order of passives as exhibited in 13 (a). The data analyzed in section 4.4 provides ample evidence of free word order of adjuncts causing no effect on the usual A-movement. Any other assumption about the merge of *by- phrase* (e.g., the merge of DP at Spec-*v*P position)

appears to cast doubt either due to the rightward movement of the DP or for some unsatisfactory stipulation about the status of *by*. The presence of locative/instrumental markings *tu/kolo,* which are both adjunctive post-positions according to Butt (2017), in Punjabi counterparts of English by-phrases strengthens the argument that phrases enter into derivation as adjuncts. The detail of such facts is presented in the analysis of Punjabi passive structures (28) and (29) in this section.

(14)

a. By police, no evidence of any corruption has been found.
b. By government, a significant change in policy has been announced.

The possibility of grammatical structures (a) and (b) strengthens that the PP *by-phrase*s are adjuncts which enter into derivation by pair merge operations. The pair merge is possible with VP as in 13 (a) where the complement of VP is raised to Spec-T position or with the whole CP as evident in 14 (a) and (b).

In light of the above discussion, this study assumes the following facts about passive derivations: they lack a *v** functional head like unaccusative derivations, they don't allow EA to merge at Spec-*v* position like their active counterparts, and they merge *by-phrases* as adjuncts by a pair Merge operation.

(15) Tom sneezed. (Collins & Hollo, 2000, p. 93)

(16) CP [TP Tom $_{k}$ T $_{vP}$ [~~Tom~~$_{k}$ *v* [V sneezed]]].

After the unaccusative and their parallel passive derivations, the discussion turns to the unergative (i.e., another type of intransitive). Chomsky's (1995b) assumption about closeness of unergrative derivations to the transitive ones can be easily observed in (15), schematically described in (16), where the singular argument behaves like an agent (i.e., EA) unlike the unaccusative derivation (3) which has no agent like argument. Owing to this difference in the nature of θ-roles, the nominal *Tom* in (15) is merged at Spec-*v* position. It also implies that the unergative derivations contain a *v*P shell unlike the unaccusative.

A significant question arises: whether the *v* of unergative is *v** with complete ϕ features or v_{def} with incomplete ϕ features. There is ample evidence to assume that the *v* of unergative derivations is def with incomplete set of ϕ features because there is no goal in the domain of *v* with which it can *Agree* for obtaining feature valuation mechanism. The sole argument EA is not in the domain of the probe *v*. Hence, being v_{def} the valuation of ϕ features of *v* in unergative constructions is not obligatory. However, this *v* can assign θ-role to the EA merged at its specifier position. In this case, the *v* may have default Agree features. The EA/subject merged at Spec-*v* position is still active to be the *goal* of some *probe* other than *v*. At this stage of derivation T is merged. T has a complete set of un-interpretable ϕ features, so its features search for a *goal* to value the un-interpretable features. For instance, in (15) the nearest *goal* is the EA *Tom* which Agrees with the *probe* T. In this operation, the structural case features of the goal are valued as nominative and the ϕ features of the T are valued. For the valuation of ϕ features, *Agree* alone was sufficient, but the EA *Tom* moves to Spec-T position to satisfy the EPP features of T. Hence, the derivation converges as all the un-interpretable features are valued.

Punjabi, in contrast to English, is a split ergative language which shows ergativity with respect to aspect and person (Butt 2017, p.747-49). After a detailed survey of the data, this study finds that the agentive third person subjects of transitive and unergative clauses in perfective aspect may be marked with *–ne* postposition while the subjects of transitive clauses in non-perfective aspects (habitual or progressive) and intransitive clauses (i.e., unaccusative and passives) are marked with no postposition. This pattern can be observed in structures (a) to (f) in (17).

(17)

a. Oh-ne mae-noon/nuu bulaya.
   he-erg.m.s me-acc.s call-perf/pst.m.s
   (He called me.) (Shah, 2015, p. 99)

b. Maen khana kha lia e.
   I.1st.s mean-m.s eat take-perf.m.s is
   (I have eaten the meal.) (Shah, 2015, p. 111)

c. O sakuul jaanda ai/sii.
he school go-imperf.m.s is/was
(He goes to school/He used to go to school.) (Bhatia, 1993, p. 254)

d. Main khat likh raii sii/saan.
I.1st.f.s letter.m.s write prog.f.s was
(I was writing the letter.) (Derived from Bhatia, 1993, p. 394)

e. E Khat likkhya hoya e.
this letter.m.s write.ppl.m.s be-perf is
(This letter is already written.) (Shah, 2015, p. 144)

f. Aadmii aaiaa.
man-m.s come-pst.m.s
(The man came.) (Bhatia, 1993, p. 85)

In perfective clause (a), the third person subject *Oh (he)* is marked with ergative case. The possibility of ergative case on agentive third person subjects of the perfective clauses may, however, vary on the basis of selection of a particular *v* from lexicon (a phenomenon dealt in detail in subsequent discussion). The comparison of (a) with (b) illustrates that ergativity is allowed in a particular person and aspect in Punjabi. In (b), the first person subject *main* does not allow overt ergative marking even though the clause is in perfective aspect. The structures (c) and (d) illustrate that ergative case is not possible in habitual and progressive clauses. The passive structure (e) and unaccusative structure (f) illustrate that ergative case is not possible on the subjects of such clauses.

Unergative are the type of intransitives which are an exception in that they allow subjects to assume ergative post-position *–ne* in perfective aspect clauses just like transitive clauses. This can be seen in structures (18) below. The unergative sentence in perfective aspect allows ergative marking on the third person subject *O* in (a) while the unergative sentence in same aspect does not allow ergative marking on first person subject in *main* in (b).

(18)

a. O-ne thukkia.
he-erg spit-pst.m.s
(He spitted.)

b. Main thukkia.
I spit-pst.m.s
(I spitted.)

The pattern delineated above regarding the marking of ergative case on subject cannot be witnessed to hold very rigidly. To find out the locus of ergative case is not a straightforward matter. Like other South Asian neighbors, Urdu/Hindi and Marhati etc., Punjabi shows a complex behavior regarding ergative case. Apart from other factors, ergativity also depends upon selection of the main verb V and light verb *v* from lexicon. There are main verbs which do not allow ergative case even in usual ergative situations (i.e., agentive third person subject and perfective aspect). In a similar way, there are intransitive verbs which may allow ergative case. Bhatia (1993) provides examples of the transitive verbs like *boulnaa (to speak)* and *launaa (to bring)* as the verbs which do not allow ergative case in perfective aspects whereas the intransitive verbs such as *nichnaa* (to sneeze) allow the ergative necessarily. This is evident in (19), (20), and (21).

(19) O e bolii
she this speak-pst.f.s
(She spoke this.)

(20) *O-ne e bollia
she-erg this speak-pst.m.s
(She spoke this.)

(21) O-ne nicchiaa
she-erg sneez-pst.m.s
(She sneezed.) (Bhatia, 1993, p. 169)

In (19) and (20) the transitive verb *bolnna* (to speak) does not allow ergative marking on subject *O* (she) resulting in the ungrammaticality of (20) while in (21) the intransitive verb *nicchnaa* (to sneeze) allows ergative marking on the subject. It leads to the assumption (22) which is pivotal for the subsequent discussion.

(22) Apart from grammatical contexts (i.e., agentivity, aspect, and person), ergative case on the subject in the Punjabi language also depends on the selection of particular V and *v* from the lexicon.

Bhatia (1993) maintains this fact by considering four possibilities as shown in Table 5 in (23) which clearly shows that selection of the main verb V and the light verb *v* (commonly known as explicator in many traditional grammars of Punjabi) play crucial role in ergative marking on subjects. This has a bearing on the fact that ergative case in Punjabi may be lost in the grammatical contexts (aspect, agentivity, and person) and it may primarily depend on the selection of a V or *v* from the lexicon. This is a strong argument to maintain that ergative is sourced from *v* which assigns this quirky case as its lexical/inherent requirement among a cluster of other complex factors.

(23)

Table 5

The Distribution of Ergative Case with Respect to Main Verb V and Light verb v (Explicator)

	Main verb	**Explicator (Light verb *v*)**	**Compound verb**
(a)	*+ne* *likh 'write'*	*-ne* *baiTh 'sit'*	*-ne* *likh baiTh 'write*
(b)	*-ne* *bol 'speak'*	*+ne* *lai 'take'*	*+ne* *bol lai 'speak'*
(c)	*-ne* *ho 'be'*	*-ne* *jaa 'go'*	*-ne* *ho jaa 'become'*
(d)	*+ne* *likh 'write'*	*+ne* *lai 'take'*	*+ne* *likh lai 'write'*

(Bhatia, 1993, p. 169)

An important point of comparison between two languages emerges here: Punjabi has a number of overt light verbs while English supposedly has one abstract one.

In extension to (22), a more interesting fact may be observed in Table 5 that it is not the V which determines ergative or usual nominative case on the subject, rather the functional category *v* plays a pivotal role in determining the ergative case. The data provides evidence of the cases where the V (e.g., *likhna* (to write)) belongs to the class of verbs which select *+ne* postposition marking on the subject; however, the occurrence of

such +*ne* verbs with –*ne* light verbs *v* (i.e., according to 23 (a)) leads to –*ne* marking on the subject. This phenomenon can be seen in structures (24) below.

(24)

a. O-ne khat likh lea howe-ga.
he-erg letter write take.perf.m.s will
(He will have written the letter.)

b. O (khat) likh baithia howe-ga
he (letter) write sit-perf.m.s will
(He will have written a letter.) (Shah, 2015, pp. 120-121)

Both (a) and (b) in (24) are in perfective aspect with third person subject *O (he).* However, (a) allows ergative marking on the subject but (b) does not. It is important to note that the V *likhna* (to write) is same in both sentences. The difference lies in the *v* element. The structure (a), according to 23 (d), contains the *v lea* (from the root *laina* take) which allows +*ne* marking so the subject is marked accordingly while the (b) contains the *v baithia*, according to 23 (a), which allows –*ne* marking so the subject is unmarked accordingly. In light of such evidence, it is easy to assume that *v* plays a very crucial role in deciding the ergative case on subject amidst other factors: agentivity, third person and perfective aspect.

This study suggests modification in (12b) by identifying that in case of a –*ne* verb and +*ne* light verb *v*, the subject may be +*ne* inducing its sole dependence on *v*. To represent the facts in (23b) Bhatia provides the following structures in (25).

(25)

a. O bol litta.
he speak take-pst.m.s
(He spoke.)

b. (*?)O-ne bol litta.
he-erg speak take-pst.m.s
(He spoke.) (Bhatia, 1993, p. 170)

The grammaticality of structure (a) and ungrammaticality of (b) confirms the fact in 23 (b); however, this study disagrees with Bhatia's assumption regarding ungrammaticality of (b) on the basis of evidence provided in his own work. There is evidence in his work where the main verb *bol* takes *+ne* marked subjects. Two such structures are presented in (26) below. It shows that in Punjabi *bolnaa* (to speak) is an exception with respect to *+ne* and *–ne* makring on subject.

(26)

a. O-ne e boliaa <jad o kaake-nuu kataab para rai si>.
He-erg this speak <when he child-dat book read ing was>
He spoke this when he was reading book to the child.

b. O-ne <ki-de naal jaandia> e boliaa?
He-erg <who-gen.obl with go-pst.ppl.adv this speak-pst.m.s
(Bhatia, 1993, p. 17)

The part of structure shown in <> are adjuncts (discussed in detail in section 4.4). It is only relevant here to note that the verb *boliaa* allows *+ne* marking on the subject of the transitive clauses *O-ne boliaa* in both 26 (a) and (b). It shows that in Punjabi *bolnaa* (to speak) may occur with *+ne* marked subjects as well. There seems no problem in assuming that 25 (b) is grammatical contrary to Bhatia's assumption about this structure. It is not difficult to assume that *v* has a direct bearing on the assignment of ergative case. In the cases where the V requires the ergative marking the co-occurring *v* may alter the ergative case marking on the subject if it belongs to the class which doesn't allow ergative marking. On the basis of inspection of data, (27) is assumed to hold true for ergative case in Punjabi.

(27) The locus of ergative case is *v* in Punjabi.

The minimalist analysis of simplest intransitive Punjabi constructions, unaccusative, strengthens (27). There is no evidence of ergative marking on subjects of such constructions. The unaccusative structures (28), (29), and (30) are derived from the list of intransitive verbal stems provided by Bhatia (1993, p. 269).

(28)

a. Main apar gea (w)aan
I reach go-perf.m.s am
(I have reached.) (Shah, 2015, p. 111)

b. O apar gea e.
he reach go-perf is
(He has reached.)

c. *O-ne apar gea e.
he-erg reach go-perf is
(He has reached.)

(29)

a. O bethya.
he sit-pst.m.s
He sat. (Shah, 2015, p. 113)

b. *O-ne bethya.
he-erg sit-pst.m.s
He sat.

(30)

a. Oh dorya
he run-perf.pst
(He ran.) (Derived from Shah, 2015, p. 113)

b. *Oh-ne dorya
he-erg run-pst.m.s
(He ran.)

It is evident from (28), (29), and (30) that the unaccusative derivations do not allow ergative marking on the subjects. The structures are in perfective aspect and contain third person subjects (i.e., the factors which usually demand ergative marking), but there is no possibility of ergative marking as confirmed by the ungrammatical structures (i.e., 28 (c), 29 (b) and 30 (b)). Unlike English, the unaccusative/passive structures in Punjabi may select a light verb *v*; however, this study finds that unaccusative

verbs are always selected by defective v_{def} which belong to *–ne* class of light verbs as mentioned in (12). The data provide no evidence of any structure like (31) below.

(31) *O-ne apar litta.
he-erg.3rd.m.s reach take-pst.
(He reached.)

The first point of comparison between English and Punjabi syntax is the ability of unaccusative verbs to take an overt light verb *v*. The English unaccusatives, according to the configuration (2) suggested by Chomsky (1995b), contain no light verb. On the other hand, the equivalent Punjabi derivations select overt light *v*, but it is v_{def} which has an incomplete set of ϕ features (i.e., they have no ability to value the structural case features of a matching goal). So, in case marking mechanism, English and Punjabi unaccusative constructions are not different. The sole argument merged with the main verb as its complement enters into Agree operation with T which values the nominal's structural case features as nominative. The derivation of (28) can thus be illustrated in minimalist framework according to (32).

(32) CP [TP [Main$_i$–*v*P [VP-[*Main*$_i$ puch V]- gya *v*]- (w)ann T]]

The argument *Main (I)* merges as the complement of the unaccusative verb *apar (reach)* to form the VP. This VP merges with v_{def} to form *v*P which merges with T *(waan)* to form TP which merges with C to complete the CP. The T derives a complete set of ϕ features from C. The *v* being a defective functional element cannot value structural case features of the nominal *Main (I)*. So, in the Agree between v_{def} and the nominal, the incomplete set of un-interpretable ϕ features of v_{def} are valued, but no structural case is valued for the nominal which remains active as a *goal* for entering into some further *probe-goal* relation with a matching *probe*. The un-interpretable ϕ features of T become the *probe* to search for the nearest active *goal*. In this way, the nominal becomes the *goal* of the *probe* T. The *probe-goal* Agree operation could value the un-interpretable feature of the T and the matching nominal *goal*, but the EPP feature of T could only be satisfied by the IM of the nominal to the spec-T position. For this purpose, the composite IM operation is obtained under which the EPP and un-interpretable features of the *probe* T

are valued and the un-interpretable structural case features of the goal receive nominative case value.

In the feature valuation mechanism, Punjabi unaccusatives are not different from English. The only considerable difference is the existence of an overt light *v*. This difference does not affect the mechanism of derivation of an unaccusative CP in both the languages because the case valuing functional head T remains same to assign nominative case to the sole argument. As far as light *v*s of Punjabi intransitive constructions are concerned, the difference between *v* of unaccusatives and that of unergatives can be stated in (33).

(33) Both types of intransitive in Punjabi (i.e., unaccusative and unergative) may contain overt light verbs *v* which are defective by virtue of containing incomplete sets of ϕ features; hence, they are unable to value structural case features of a goal. However, the *v* of the unaccusative can not assign inherent ergative case which may be assigned by the *v* of the unergative.

Before setting off for the detailed analysis of unergative derivations in light of (33), it is important to explore the feature valuation mechanism in passives which are parallel to unaccusatives in the status of little *v*. The similar status is obtained from the fact that both unaccusative and passive lack agentive subject; hence their *v* is v_{def} with an incomplete set of ϕ-features. Unlike English and similar languages, in Punjabi both transitive and intransitive structures can be converted into passive from which is obtained by marking locative *to* or instrumental *de kolo* postposition to the subject of active voice clause and using past participial verb form with the light verb *v jaa* (Bhatia, 1993, p. 234). It is worth mentioning that both types of marking are possible with both transitive and intransitive according to the structures provided by Bhatia. This can be studied in (34) and (35) below.

(34)	O	to/de -kolo	khat	nai pariaa	giaa.
	he	inst.pp/gen.obl-near-inst.suf	letter	not read-ppl.pst.m.s	go.pst.m.s

(The letter was not read from him.) (Bhatia, 1993, p. 234)

(35)	Razzia	to/de	-kolo	nai	khadda	gia.
	Razzia.f.s	inst.pp/gen.obl-near-ins.suf		not	eat	go-pst.m.s
	(Razzia could not eat.)			(Derived from Bhatia, 1993, p. 235)		

Structures (34) and (35) are passive forms derived from their transitive and intransitive active voice structures respectively. The subject *khat (letter)* of (34) is derived like the subjects of usual unaccusative constructions which initially merge as IA complement of VP and then derived to subject position Spec-T by the composite operation IM. The phenomenon of having a derived subject makes unaccusatives and passives parallel in mechanism of valuation of un-interpretable features and assigns an equal status to the *v*s of both constructions. However, passive structure (35) poses problems for maintaining a straightforward similarity between unaccusatives and passives. The subject *Razzia* is not derived, but obtained by marking instrumental *de kolo* or locative *to* postposition to the subject of an unergative intransitive structure.

An analysis of elements marked with locative or instrumental case *Razzia* and *O (he)* and their comparison with English *by-phrases* render interesting facts. The subject *khat* of (34) is unmarked as it is derived from the object position, but the subject *Razzia* in (35) is marked with instrumental/locative postposition as it is not derived from object position. However, the marking of similar instrumental/locative postposition on the non-subejct pronoun *O(he)* in (34) leads to search for something common between marked subject *Razzia* and marked non-subejct *O(he)*. If both these nominal are non-derived and they allow similar marking there may be a possibility that they are derived by a similar mechanism. Interestingly, Butt (2017, p. 747) mentions both instrumental *kolo* and locative *to* markings as adjunctive postpositions. According to her, the English counter part of locative *to* is *from*. Similarly, Bhatia (1993) uses *from* in English translation of (34) instead of *by*. The possibility of adjunctive postpositions on the nominal *O(he)* and *Razzia* in (34) and (35) helps in assuming that they are adjuncts which are pair merged in the derivations instead of set merge: a similar fact has been assumed earlier about English *by-phrases* in the analysis of English passives. The Punjabi *de kolo*/*tu* marked expressions are equivalent to English *by-phrases* in the sense that both are adjuncts pair merged to the derivation. The presence of adjunctive (i.e., instrumental/locative) post-

positions on Punjabi counterparts of English *by-phrases* casts doubt on Collins' (2005, p. 83) assumption that *by* is used in passives as a dummy preposition which consists entirely of un-interpretable features unlike the locative ones which contain interpretable features as well. Hence, it is assumed that English *by-phrases* are equivalent to Punjabi *de kolo*/ *tu* phrases: both enter into derivation as adjuncts.

Despite of the possible difference between passive and unaccusative in certain cases like (20) where passive is obtained from unergative active form there is strictly no possibility of ergative case on any of the two derivations. It implies that the inability of assignment of ergative case on subjects of unaccusatives and passive constructions is not dependant on their quality of obtaining a derived subject; rather it solely depends on the light *v* which idiosyncratically decides in unaccusative, passive and unergative constructions whether to assign ergative on the subject or not. In light of such evidence, this study is led to assume (36).

(36) The v_{def} of unaccusatives and passives are not straightforwardly parallel in terms of argument structure, the latter may have non-derived subject if converted from unergative active form. The inability of ergative case on subjects of passive derivations lies in that these subjects are already marked with instrumental or locative post-position.

In Punjabi, the minimalist analysis of the unergative is not as simple as unaccusative. The complexity arises from the possibility of ergative case marking on the subjects of unergative derivations in usual ergative situations: agentivity, aspect, and third person. However, these grammatical contexts may lose ergative case if the light verb *v*, selected for a particular derivation, doesn't allow it. This property of the *v* has led this study to assume (27) for the source of ergative case. In usual non perfective clauses the subject remains unmarked, and first and second person pronouns always remain unmarked even in perfective clauses. The mechanism of case marking in unergative structures which do not allow ergative subjects is similar to the usual nominative-accusative languages like English. Verbs like *ronaa* (to weep), *bolna* (to speak) etc. are the verbs which do not allow ergative marking in usual ergative contexts (It has already been observed in the above discussion that the verb *bolna (to speak)* is an exception as

the data has evidence of ergative marking on the structures containing this verb); however, at the moment, it is more necessary to observe that the V may determine ergative in case of absence of an overt *v*. This is similar to the fact that V bears the marking for aspect in the absence of an overt *v*; so, it is not difficult to assume that the ergative is in fact sourced from the *v* even in the case where is appears to be sourced by V. In the unergative structures (37)-(39), the subjects are not marked with ergative.

(37) O bolya si.
he speak-pst.m.s was
(He spoke.) (Shah, 2015, p. 115)

(38) *O-ne bolya si.
He-erg speak was

(39) O roya si.
he weep-pst.m.s was
(He wept.) (Shah, 2015, p. 115)

The structures (37) to (39) are perfective clauses having third person subjects (i.e., the factors which favor the *ne* marking on subjects). However, the subjects in the structures receive nominative case value. Analysis of (37) is presented in detail. The verb *bolya* merges with the *v* to form *v*P. The pronominal *O (he)* is merged at Spec-*v* position as EA. The *v* has an incomplete set of un-interpretable ϕ features which may not be valued obligatorily. Furthermore, *v* cannot enter into Agree operation with EA as the latter is not in the Agree domain of the former. The *v*P merges with T to form TP which merges with C to form CP. After the merge of C, T derives the Agree features from C which enter into derivation un-interpretable. These derived features of T become *the probe* to search for an active goal with matching interpretable ϕ features. The EA *O* (he) is still active. By entering into Agree with T, the EA values the un-interpretable features of T and receives the nominative case value from T. The mechanism of obtaining such unergative derivations of Punjabi matches the mechanism of derivation of English unergative as the EA is valued for nominative structural case. However, not all unergative exhibit a similar phenomenon in Punjabi.

The minimalist analysis of Punjabi unergative derivations which allow ergative subjects, in particular grammatical contexts, not only make the difference from usual nominative case alignment but pose some problems which have not yet found satisfactory solutions. Bhatia (1993) mentions that *thukna* (to spit) and *nichnaa* (to sneeze) are the verbs which force ergative subjects in usual ergative contexts. Structures (40) and (41) exhibit this fact.

(40) Kuri-ne nichiaa.
girl-erg.f.s sneez-pst.m.s
(The girl sneezed.) (Bhatia 1993, p. 87)

(41) O-ne thukia.
He-erg spit-pst.m.s
(He spitted.) (Derived from the root *thukna* as mentioned in Bhatia, 1993, p.86)

A general agreement among the theorists, who maintain ergative as inherent case, is that the locus of ergative case is *v* as this idiosyncratic/quirky case is assigned to arguments which bear *agent* θ-role. So, the head which assigns θ-role to EA must govern the ergative case as well. Moreover, in recent studies Legate (2008, 2017) argue that the other factors like aspect center around *v* leading to the fact that ergative is assigned by *v*. According to Ura (2001, 2006), this requires modification in Chomsky (2000, 2001a) who maintains that arguments are not valued case at their θ-position. For ergative languages, this condition needs to be relaxed if it is to be assumed that ergative is assigned by θ-role assigning head *v* which assigns agent θ-role to the subject. In light of this modification supported by the empirical evidence found in the Punjabi language, this study assumes (42).

(42) Ergative is assigned to the subj NP by the *v* at the θ-position.

In light of (42), the minimalist derivation of (40) and (41) would render different mechanism from (17). In (40), the functional head *v* merges with its complement V *nichiaa* to form *v*P. The V, by virtue of its lexical requirement, merges with a *v* which demands ergative case on third person subjects in perfective clauses. At this stage, the EA *kuri (girl)* is merged at Spec-*v* position. According to (42), the EA is assigned both θ-role

of agent and ergative case by the same functional head *v*. The assigning of θ-role and ergative case are different actions performed by the similar head. This case marking mechanism is different from the valuation mechanism of structural (i.e., nominative and accusative) cases which are assigned θ-roles and case values by different functional heads. However, some questions arise particularly in the context of unergative constructions; for instance, the *v* in unergative constructions is v_{def} which according to Chomsky (2000, 2001) cannot value structural case to an NP. If it is assumed that (42) holds for intransitive unergative Punjabi constructions, this study finds that the modification (43) would also be required in Chomsky's assumption.

(43) A defective *v* may assign inherent case to the nominal in particular grammatical contexts.

Stipulations (42) and (43) lead to implication (44) which is of pivotal significance for the subsequent discussion.

(44) Structural case and inherent case are assigned under separate conditions and completely different mechanisms.

In light of (43), it is assumed that the EA *kuri* in (40) is assigned ergative by *v*. An important issue arises here: whether the case assignment mechanism between *v* and EA values the un-interpretable ϕ features of *v*. According to Ura's (2000, 2001, 2006) proposal the un-interpretable ϕ features of *v* are valued in the case assignment between *v* and the EA, and T assumes default Agree features as there is no NP left behind in unergative derivations to value the un-interpretable features of T. Punjabi data provide widespread evidence of default agreement on T. The following structures derived, with minor modifications, from Butt (2017, p. 48) demonstrate how default agreement looks like.

(45)

a.	Main	lakri		vadi	(si).
	I.pron.1.sg	wood.f.sg.nom		cut-pst.f.s	be-past.s
b.	Tu	kamputar	bechia	(si).	
	you.pron.2.sg	computer	sell-pst.m.s	be-past .s	

c.	Larki	mundia-un(u)	mar-di	ai.	
	girl.s	boy -acc.m.pl	hit-pres.Fsg	be-pres.s	
d.	Larki-ne	mundian-nu	maria	si.	
	girl-erg.s	boy.pl-acc	hit-past.M.sg	be.past.3.s	
e.	Larkian	mundian-nu	mar	raiaan	saan.
	girl.pl	boy.pl-acc	hit	ing.pl.prog	be.past3.pl.
f.	Larkian-ne	mundian-nu	maria	si.	
	girl-erg-pl	boy-acc.pl	hit.past.sg	be.past.3.sg	

It is easy to witness from structure (a) to (f) in (45) that in perfective clauses (a) and (b) the auxiliary elements T agree with the object as evident in singular *si* form of T. In present and progressive clauses (c) and (e) the auxiliary T *ai* and *saan* agree with the subjects respectively. However, in case of post position markings on the subject or the object the auxiliary agrees with neither of these and assumes a default agreement as evident in (d) and (f). If (e) and (f) are compared, in (e) where the subject is unmarked and the clause is in progressive aspect, the plural auxiliary *saan* agrees with the subject *Larkain (girls)*; in (f), both the subject and object are marked, the auxiliary assumes a default singular form *si* agreeing with neither of the two arguments. The structures in (45) demonstrate agreement patterns in transitive clauses. The similar facts may be found in intransitive clauses. Punjabi auxiliaries exhibit an interesting feature in past tense sentences where they may avoid an overt realization. If overt auxiliary is added to such structures the similar default agreement patterns may be obtained. For (40) and (41), it is not difficult to understand that if overt tense auxiliary is added to them, the T will assume default singular form even in the case of plural subjects as illustrated in (46) and (47) below.

(46) Onhan-ne nichiaa (si).
they-erg. sneeze.pst.m.s be-pst.s
(They sneezed.)

(47) Onhan-ne thukia (si).
they-erg past.pst.ms be-pst.s
(They spitted.)

In light of the above data Ura's argument about default features on T appears to carry weight; however, her claim regarding valuation of ϕ features of *v* in ergative case assignment to EA is problematic if evaluated in light of Chomsky (2008) which eliminates the possibility of any operation between Spec-head. The EA does not lie in the c-command domain of *v*; hence no Agree operation (probe-goal relation) can be induced between the two elements. In this situation there are two possibilities: the valuation of incomplete set of ϕ features of *v* in unergative constructions is either non-obligatory or it may have default Agree features. In Punjabi there is no problem is suggesting default Agree features on *v* because not only subjects but objects may also be dropped in certain situations. The phenomenon of dropping object is dealt with detail in section 4.2 of this chapter. In light of the correction proposed in Ura's (2000, 2006) proposal (48) may be obtained.

(48) The mechanism of inherent case assignment cannot induce Agree operation which can value the un-interpretable ϕ features of the case assigning head *v*. Hence, *v* does not receive any value for its ϕ-features from the NP to which it assigns the inherent case. In this situation *v* may assume incomplete set of default Agree features.

In light of (48), it is assumed that in (40) that the NP *kuri* is assigned inherent ergative case and θ-role by the functional category *v*, but the un-interpretable ϕ features of *v* receive no value from the NP. So, *v* assumes incomplete set of default Agree features. When the derivation reaches the stage of TP and CP, the T derives Agree features from C and probes for some goal to value it un-interpretable ϕ features. The EA *kuri* is in the domain of T, but it can't be the goal for Agree operations as it has already been assigned inherent case. So, T also has to assume default agreement. This is possible in the case of derivation (40) as Punjabi is a pro-drop language. The question arises whether EA *kuri* can be raised to satisfy the EPP features of T or it should remain *in-situ*. Both options can be obtained either by assuming that the EPP features of T can also be default by virtue of pro-drop phenomenon or by assuming that the subject NP *kuri* may

raise to Spec-T positions to satisfy the EPP features of T because the mechanism of satisfaction of EPP is a separate matter from *probe-goal* Agree operation. In both ways the derivation would be convergent. Thus, the derivation of (30) can be schematically described in set configuration (49).

(49) CP [TP Kuri-ne$_i$-[*v*P Kuri-ne$_i$ [VP nichiaa] -*v*]-T]

In light of the analysis of the data consisting of defective *v* categories, unaccusative, passive and unergative derivations, conducted so far in this section, this study concludes that ergative is an inherent case sourced from *v*. A comparison is possible between little *v* of usual nominative language English and split ergative language Punjabi. In English, unaccusatives and passives contain no *v* at all, but unregatives contain a defective abstract *v* with incomplete set of ϕ features. In contrast to it, in Punjabi all types of intransitive constructions may contain overt light *v* with varying features. The Punjabi unaccusatives are not straightforwardly parallel to passives as the latter may also be obtained from intransitives marking the major difference from English where *passivaization* of intransitives is not possible. The complex and varying behavior of *v* of passives in Punjabi yields significant conceptual results for deciding the matter of the source of ergative case. Despite the possibility of different structural configurations, the inability of ergative case marking on subjects of both unaccusatives and passives yield that the quirky ergative case is not rooted in structural properties of a derivation. Unlike English, Punjabi passives may obtain thematic subjects which are marked with instrumental/genitive post positions: *tu /de kolo*. These markingsnever allow ergative case on subjects; rather they help in assuming that the elements bearing them enter into derivation as adjuncts.

The study of unergatives yields even more interesting results. Unlike English where subjects NPs in unergative derivations always receive nominative structural case value from the probe T, a split case alignment pattern is exhibited by Punjabi where the marking of ergative or valuation of nominative on subjects of unergative constructions depends on the selection of a particular *v* from the lexicon. The phenomenon of ergative as inherent case is obtained by the fact that keeping all other factors (i.e., aspect, agentivity, and person) which allow ergative case constant the case alignment may vary

between ergative and nominative because of selection of a particular *v* from the lexicon. These findings help this study in highlighting some empirical and conceptual problems in the existing approaches to ergative case. In the following part of the section, the findings rendered by the analysis of v *def* derivations presented so far are discussed in comparison to the renderings of the leading works on ergative case and its comparison to nominative case.

The leading works which shed light on ergative case and its comparison to other case alignment patterns can be divided into three approaches. The first approach is adopted by Levin and Massam (1985), Bobaljik (1993), Chomsky (1993), Bittner and Hale (1996a), and Bobaljik and Branigan (2006) where it is stipulated that ergative is a high case sourced from the CP/TP domain. This study rejects this claim on the basis of its oversimplification of ergative case which is assigned amidst a cluster of complex and quirky factors: aspect, agentivity, and person. Moreover, at the end the complexity is resolved by the factor that all these ergative contexts may lose ergative which is ultimately decided by the choice of a particular *v* from the lexicon.The Punjabi data shows that with other factors constant, the case alignment may vary between ergative and nominative depending upon selection of *v* form the lexicon. Had the ergative been sourced by the high CP/TP domain, there should have been no variation of case alignment with a variation of *v* with all other factors constant. Hence, *high domain* approach is problematic in accommodating the idiosyncrasy of ergative case.

The second approach initiated by Marantz (1991), developed extensively in Baker (2014a, 2015), and carried forward in Baker and Bobaljik (2017) assumes ergative as a dependent case whereby the marking of ergative does not depend upon the absolute position of an NP/DP in a syntactic structure, but depends upon its relation to other NP/DPs in the same domain. The marking of the ergative is, thus, reduced to a very simple parameter which induces that in case where two DP's are present in the derivation, the higher may be marked as ergative while lower may be marked as accusative. In case the structure contains only one NP, the intransitive subject, the sole NP would remain unmarked. This simplification of ergative case again fails to consider the cluster of factors which enable ergative case marking. This study finds ample

evidence from Punjabi intransitive data, in unergative structures, to assume contrary to the line of reasoning adopted by dependent case theorists. The unergative derivations have only one NP/DP, merged as EA at the Spec-*v* positions, which is marked ergative case without the presence of some other NP/DP in its c-command domain. Furthermore, this study also finds evidence against secondary assumption of the dependent case approach that derived subjects, the subjects of passive and unaccusative constructions, are never marked ergative. This study finds clue that the subject of passive derivations may not be obligatorily derived in all syntactic circumstances. Unlike usual nominative languages where passive form can be obtained from transitive derivations only, there is evidence that Punjabi may also obtain passive from intransitive unergative derivations. In that case the subject is not derived, and the unavailability of ergative on subject is due to lacking the *v* which may assign ergativecase instead of the derived nature of subject. In the presence of suchevidence, the dependent case approach fails to hold for the complex ergative phenomenon of languages like Punjabi. Hence, it is rejected for its high oversimplification of the matter.

There is a third line of reasoning which views that ergative is inherent case assigned from *v* to the EA at Spec-*v* position. This approach is adopted in Woolford (1997, 2006, 2017), Aldridge (2012), Anand and Nevins (2006), Laka (2006, 2017), Legate (2006, 2008, 2012, 2017), Massam (2006), Coon (2013a), Mahajan (2012), and Sheehan (2017). With varying details, these authors agree that ergative is assigned to subject NP/DP at θ-position by the functional head *v* which also assigns agent θ-role to that NP/DP. This marks the difference between nominative and ergative alignment patterns as in the former pattern case and θ-roles are valued/assigned by different heads: EA receives θ-role from *v* and case valued from T; on the other hand, in latter pattern, the EA receives both ergative case and θ-role from the same functional head *v*. However, there are varying opinions regarding the case alignment of direct object (DO) IA in ergative contexts: for instance, Woolford (2006) and Mahajan (2012) view that the object NP/DP (IA) receives case value from T under a long-distance relation while Legate (2008) proposes that such NP/DPs may receive covert accusative case value from *v*. This study finds ample evidence to validate the basic assumption of inherent case theorists that ergative is inherent case sourced from the lower domain *v*; however, there is some

lacking in the overall mechanism to reach the final argument which may better be discussed after the analysis of transitive derivations which are the safest heavens for ergative subjects. At the current stage of analysis, conducted on intransitive constructions only, this study supports the ergative as inherent case approach by highlighting the fact that amidst a cluster of factors agentivity, perfective aspect, and third person (These factors here imply that ergative is possible on third person agentive subjects of perfective clauses) the ergative may appear or lose on the basis of selection of a particular*v* from the lexicon. This line of argument may be strengthened after the analysis of the data in next section after which the critical evaluation of the three approaches may be on stronger grounds in light of further empirical evidence provided by the data consisting of transitive derivations.

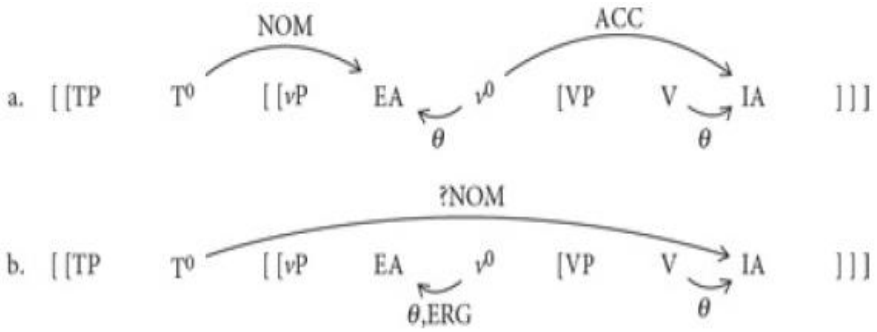
4.2 Transitive *v** Derivations

This section presents the comparative analysis of the derivational procedures which obtain the transitive *v** derivations in English and Punjabi. Such derivations contain complete argument structure (containing both IA and EA unlike the v_{def} derivations: unaccusatives and unergatives which only contain either of the two arguments) wherein the light verb *v* has a complete set of ϕ features which is labeled as *v** to differentiate it from the simple *v* of intransitive /passive derivations which have incomplete set of ϕ features. The functional element *v** is the head of strong phase level *v**P. The complete set of ϕ features of *v** make it eligible to value the structural case features of a goal NP/DP under Agree operation. The structural case value received from *v** is termed as accusative that is comparable to the nominative structural case which is valued by the functional head T. Within the broad classification of languages as ergative and nominative, this section focuses on how the transitive clauses are derived in the two languages with different feature valuation mechanisms with respect to case. Exhibiting a split case alignment pattern between ergative and nominative, Punjabi overlaps English which only shows canonical nominative case pattern in all grammatical situations. In non-perfective clauses and first/second person perfective clause, Punjabi allows usual nominative case pattern; however, it shows aspect and person based ergativity in perfective clauses with third person subjects. This variety of behavior has posed problems

for UG researchers in deciding the source of ergative case and its difference from the nominative-accusative case patterns.

The findings of section 4.1 lead this study to assume, in line with the basic claim of inherent case theorists (e.g., Woolford (2006, 2017)) and Legate (2008, 2017) among others) that ergative is an inherent case assigned by the functional head *v* to the NP/DP at Spec-*v*/*v**. The basic difference between nominative and ergative alignments is that in the former case pattern θ-role and case are assigned and valued by different functional heads *v* and T respectively. The functional head *v* assigns θ-role to the subject as EA while the T values the structural case features of the same NP/DP under Agree operation. On the other hand, ergative is assigned to the NP/DP by the head *v* which also assigns θ-role to this NP/DP as EA. Khan and Kausar (2021) cite the configurations (a) and (b) from Baker and Bobaljik (2017, p. 118) to illustrate the difference between the nominative and ergative case alignment pattern. The subsequent discussion further extends the analysis of transitive structures, by providing a more detailed set of data, upon the facts explored by Khan and Kausar (2021).

(1)



(Baker & Bobaljik, 2017, p. 118)

The schematic descriptions (a) and (b) in (1) demonstrate the difference between case assignment patterns in nominative and ergative case systems respectively. These configurations capture the widely accepted line of reasoning proposed by inherent case approach. Although this study is led to assume the basic claim of inherent case theorists on the basis of evidence provided by the unergative structures in section 4.1, yet this

study criticizes the theorists for adopting a conservative mechanism to reach their final assumption and not providing a satisfactory feature valuation mechanism required for obtaining convergent derivations that is more in line with the Chomsky's *phases approach* adopted in his post-2000 research. The inherent case theorists mostly rely on superficial evidence which does not provide solution to many empirical and conceptual problems which arise if their basic claim is assumed true. After the analysis of transitive derivations in both languages, this study provides a framework to solve the problems faced by different approaches to ergativity.

Assuming in line with Chomsky (2008), the schematic configuration (1a) shows that in nominative languages like English the transitive derivations are obtained by the following derivational procedure: The IA (obj) merges with the main verb V to form VP. This VP merges with *v** to form *v**P which merges EA at Spec-*v** position. Both IA and EA are assigned θ-roles, at the time of their initial merge, by the heads V and *v** respectively. However, both the arguments wait to enter into Agree relation with some other heads for valuation of case features. The un-interpretable ϕ-features on the heads *v** and T and un-interpretable structural case features on argument NP/DP's enter into derivation unvalued. They should be valued before transfer to C-I interface where they are un-interpretable. The unvalued ϕ feature of *v** make it a probe to search, in its domain, for some goal NP with matching interpretable features. The nearest NP in the domain of *v** is the object NP/DP which becomes goal to enter into Agree operation with *v**. This operation values the unvalued ϕ features of the probe and structural case features of the goal NP. When a goal NP enters into Agree relation with *v**, it always receives accusative case value. The EA cannot enter into Agree relation with *v** because, sitting at the Spec-*v**, it does not fall in the domain of *v**. The un-interpretable features of T also need to be valued for convergence of derivation at C-I interface. Now un-interpretable ϕ features of T become a probe to search for a goal NP/DP in its domain. Obviously, the EA is the nearest possible NP/DP which can value the features of the probe. So, T Agrees with EA valuing ϕ features on T and structural case features of EA. As the structural case features are valued by agreeing with T, the goal's case is valued as nominative.

The schematic configuration (1b) contrastively shows the case valuation mechanism in the derivations where the subjects receive ergative case. The derivations may be obtained by the following derivational procedure: the IA merges with V to form VP. V assigns θ-role to the IA. The VP merges with *v** to form *v**P. The EA merges at Spec- *v** to complete the argument structure. The *v** assigns both external θ-role and inherent ergative case to the EA. This is unlike nominative languages where the θ-role assigning heads and case valuating heads are different. As EA is assigned inherent ergative case by *v**, it may not enter into Agree relation with T. So, T, upon its merge into derivation, probes for some far off goal (i.e., IA) for entering into Agree relation. Being already in ergative case, assigned by *v**, the EA causes no intervention effect between IA and the T. Hence, under a long distance Agree, the un-interpretable ϕ features of the T are valued and the case features of the IA are valued as nominative.

(2) He found a job. (Collins & Hollo, 2000, p. 94)

(3) CP [TP he T [*v**P ~~he~~ *v** [VP found a job]]]

The structure (2), schematically described in (3), is a transitive derivation with full argument structure (i.e., it has both IA and EA). The noun *job* merges with the determiner *a* to form the DP *a job* which is merged as IA complement with the V *found* to form VP. The IA is assigned θ-role by the head V at the time of Merge. This VP merges with *v** to form *v**P. The EA *he* merges with the *v**P at Spec-*v** position to complete the argument structure. The EA is assigned θ-role by the head *v** at the time of initial merge. This *v**P is merged with T to form TP which merges with C to complete the CP. After the Merge of C, T derives Agree and tense features from C. Hence, T is not the phase head as its features are derived from the phase head C. In this derivation, there are some un-interpretable/unvalued features on some heads: ϕ features on T and *v** and structural case features on subject (EA) and object (IA) NP/DP's which must be valued for the derivation to converge. The *v** probes for the IA *a job* in its domain to induce Agree operation for the valuation of unvalued features. In this operation, ϕ features of the *v** are valued and the structural case features of the DP receive accusative value from *v**. The subj NP still has unvalued structural case features which render it active for entering into Agree operation with some other probe. The un-interpretable features of T probe the

EA which falls in its domain. Under the Agree operation, the unvalued features of both probe and goal are valued making the derivation able to converge at C-I interface. The EA moves to Spec-T position to value the EPP features of T. The EA could remain *in-situ* if only valuation of ϕ features were required. T induces all the operations due to features derivative from C except EPP which needs a separate stipulation for maintaining that this feature is also derivative from C.

(4)

a. I like syntax (Radford, 2004, p. 190)

b. CP[$_{TP}$ I T[*v**P ~~I~~*v**[like syntax]]]

c. The audience enjoyed the play (Radford, 2004, p. 191)

d. CP [TP The audience T[*v**P~~The audience~~ *v** [VP enjoyed the play]]]

The derivations 4(a) and 4 (c), schematically described in 4 (b) & (d) respectively, where the subjects are assigned θ-role of experiener are also *v** constructions. The mechanism of derivation of experiencer is similar to the derivation of transitive. It is easy to notice in 4 (a) and 4 (c) that the EA *I* and *the audience* are merged at Spec-*v** position respectively where they receive the experincer θ-role from the *v**. However, not falling in the Agree domain of *v**, these pronominal have to be the goal of some higher probe. When the derivation reaches TP and CP stage and T derives un-interpretable Agree features from C, these features of T probe for some matching goal in the nearest search domain to value the un-interpretable features. The probes T in 4(a) and 4(c), under Agree operation, establish probe-goal relations with the goals *I* and *the audience* respectively. In both derivations, this operation values the un-interpretable ϕ features of T and structural case features of the pronominal goals as nominative. The pronominal are raised to Spec-T position to satisfy the EPP features on T. In both derivations, the IA's *syntax* and *the play* enter into Agree operation with *v* probe* receiving accusative case value for them and valuing the un-interpretable ϕ features of the *probe*. Hence, 4(a) and 4(c) are obtained by a derivational procedure that is similar to (2).

Punjabi transitive derivations exhibit the usual nominative case alignment pattern, as schematically described in 1(a), with the exception of the derivations in perfective

aspect (i.e., which contain a third person subject) where the subject is allowed ergative marking. The literature is divided regarding the source of ergative case. One group of scholars suggest that ergative is inherent case assigned by light verb, as schematically described in 1(b), while the other group suggests that ergative is structural case assigned by higher CP/TP domain. The Punjabi data of transitive derivation provide widespread evidence to help this study to assume in line with Legate (2008, 2017), Wolford (2006, 2017), Mahajan (2012, 2017), among others, that ergative is an inherent case assigned by *v** at the θ-position. A strong argument in favor of this framework of ergative marking is that factors which allow ergative center around *v** (Legate, 2017). Chomsky's (2008) *Oph* framework also support that factors like aspect and transitivity are saturated in *v**.

Punjabi transitive structures allow person and aspect based split in case marking patterns (Butt, 2017). The transitive structures in non-perfective (habitual and progressive) aspects always observe nominative case alignment according to 1(a). The perfective third person structures may allow ergative, but the data shows that selection of a particular light verb *v** may alter the ergative into nominative. So, it becomes easy to assume that ergative is assigned by *v**. This can be observed in the derivations (5)-(7) below.

(5) O (h)-ne khat likkh lea howe-ga.

he-erg letter.m.s write take-perf.m.s be.fut-will

(He will have written the letter.) (Shah, 2015, p. 120)

(6) O (h) (khat) likkh betha howe-ga.

he-erg (letter) write sit-perf.m.s be.fut-will

(He will have written (the letter).) (Shah, 2015, p. 121)

(7) a. O-ne khat likh litta.

he-erg letter.m.s write take-pst/perf.m.s (*v**)

(He wrote the letter.)

b. O khat likh bathiaa.

he letter.m.s write sit-pst/perf.m.s (*v**)

(He wrote the letter.) (Bhatia, 1993, p. 170, as cited in Khan & Kausar, 2021)

Khan and Kausar (2021) highlight the reason of allowing/not allowing the ergative marking on transitive structures. Structures (5) to (7) are the transitive in perfective aspect with the third person subjects. Structures (5) and (7a) allow ergative on the subj but (6) and (7b) do not. Structures (5) to (7) have *litta (from the root take)* and *bathiaa (from the root sit)* as the *v** elements. If (6) and (7b) fail ergative marking on the subject (i.e., amidst all the factors which allow ergative), it seems only due to the lexical requirement of the *v** *baithaia* (common in them) which inherently does not permit ergative marking on the subject. This split of case alignment in (5) to (7) helps in strengthening the assumption that the source of ergative case is little *v*. The structures (5) to (7) also confirm that the marking for the perfective aspect (i.e., one among the determining factors for the ergative case) is also borne by the *v** elements if they are overtly present.

(8) O kam kar rai ai.

she work do ing-prog.f.s is.

(She is doing work.) (Bhatia, 1993, p. 168)

(9) CP [TP O_i-[*v**P ~~O_i~~-[VP kam kar $_V$] –rai_{v*}]–ai $_T$]

Derivation (8), schematically described in (9), is a transitive structure in progressive (non-perfective) aspect with third person subject. This derivation is obtained by the following procedure. The IA *kam (work)* merges with the V *kar (do)* to form VP in which V is the head and IA is complement. This VP merges with *v** *rai* to form *v**P. The *v** merges the EA *O* (she) at Spec-*v** position. The complete *v**P, thus obtained, merges with T to form TP which merges with C to form CP. The IA and EA are assigned θ-roles *theme* and *agent* respectively at the time of merge by their respective heads V and *v**. In this derivation some constituents bear features which enter the derivation unvalued. These unvalued features have no interpretation at semantic interface. For the convergence

of derivation, these un-interpretable features must be valued before spell-out to C-I system. These features include: the ϕ features on T and *v**, and structural case features on the IA and EA. The un-interpretable features on *v** become probe to search for some active nominal goal which may value the unvalued features of both sides. In its domain, the *v** finds the obj (IA) NP *kam* as an active goal and enters into Agree operation with it. This operation values the un-interpretable features on both sides. Now the un-interpretable features of T remain to be valued. In the domain of T, the subj (EA) *O (she)* is still active to be a goal because it carries unvalued structural case features. So, T enters into Agrees with *O (she)* the valuing structural case features of the latter and ϕ features of the former. The subj *O* (she) is raised to Spec-T position to satisfy the EPP features of T. The two Agree operation which value the unvalued ϕ features of the functional heads and structural case features of the nominal are induced by the phase heads C and *v**. T is not the phase head because it induces operations on the basis of features derived from C. The mechanism of feature valuation which enables the derivation of (8) is not different from the mechanism which obtains similar derivations in nominative languages like English. The difference between the two languages lies only in the post and pre-position of head-complement relation which results into different linear word order.

The Punjabi data show that all non-perfective transitive clauses exhibit the usual nominative case alignment according to (1a). Derivation (8) is an evidence of non-perfective clause from present progressive. In the derivations (10) to (12) below, it can be observed that the non-perfective clauses always take nominative subjects and are derived in a feature valuation mechanism similar to (8).

(10) Asi ai kam kran ge.
we this work.m.s do-fut.m.pl will.
(We will do this work.) (Bhardawaj, 1995, p. 132)

(11) O (khat) likhda ai.
he letter write-imperf(habitual) is
(He writes a letter.) (Derived from Bhatia, 1993, p. 385)

(12) Main khaab wekhda saan.

I dream.m.s see-imperf (habitual) was

(I used to (see) dream.) (Shah, 2015, p. 112)

The derivations (10), (11), and (12) are in future simple, present habitual, and past habitual respectively. It is evident that they show a uniform case pattern. In these derivations the un-interpretable features are valued by Agree between *v** and obj (IA) and T and subj (EA). So, probe of T values nominative case for subj (EA) and probe of *v** values accusative case features for obj (IA). For instance, in (11) the obj (IA) *khat* is merged with V *likhda* to form VP which merges with *v** to form *v**P which merges the subj (EA) *O* (he) at spec-*v** position to complete the argument structure. For valuation of the uninterpretable features, the *v** probe agrees with the IA *khat* to value the uninterpretable features of the probe and structural case features of the goal as accusative. The *v**P merges with the T *ai* to form TP. The TP merges with C to complete the CP. T borrows the Agree features from C and for valuation of these features T probes the goal subj (EA)*O* for Agree to value the ϕ features of the probe and structural case features of the goal as nominative. Hence, the subject is marked nominative case. This nominative subject moves to Spec-T position to satisfy the EPP features of T. The similar pattern may be obtained for (10) and (12) as well.

In contrast to (8)-(12), the perfective transitive derivations in Punjabi may exhibit a different case alignment by allowing post positional ergative-*ne* marking on the subject. Apart from other factors which center around *v** (Legate, 2017), a particular choice of *v** also determines the ergative case on subject in such clause. This fact has been observed in the case of transitive derivations (5) to (7). According to the schematic configuration (1b), the ergative case is assigned to subj (EA) at θ-position by *v** unlike the structural cases: nominative and accusative which are valued by Agree operations with the functional heads other than the θ-assigning heads. The idiosyncratic behavior of ergative case alignment has divided literature in identifying the source of ergative case. There are three major approaches (discussed briefly in section 4.1; repeated here): The first approach assumes that ergative is a structural case marked/valued by the higher C/T domain; the second approach assumes that ergative is a dependent case which is marked

to the higher of the two NP's which fall in same c-command domain, hence ergative is dependent on the presence of some other NP in the same domain; and last but not least approach assumes that ergative is inherent case assigned by *v** to the subj(EA) at its θ-position. The Punjabi data on transitive derivations provide ample evidence to assume the third line of argument.

Despite of the agreement on the basic assumption about the source of ergative as inherent case, there are varying opinions within inherent case approach about the case assignment mechanism on the obj NP/DP. Legate (2008) assumes that obj is assigned accusative case by *v** while Mahajan (2017) rejects her claim by stipulating that object receives case by T under a long distance Agree operation. This situation is represented by a '?' mark with nominative case in configuration (1a). After assuming the locus of ergative is *v*/*v** on the basis of evidence provided by intransitive (i.e., unergative) derivations in section 4.1 and transitive derivations in this section, the following analysis attempts to explore the source of case on obj NP/DPs in the derivations where the subj is marked with ergative case.

(13) O-ne sabak parya e/ai.

he-erg lesson.m.s read.perf is.

(He has read the lesson.) (Shah, 2015, p. 112)

(14) CP [TP O-ne$_i$-[*v**P [~~O-ne~~$_i$-[VP sabak parya]-*v**]- e T]

(15) O-ne khanna kha lia e/ai.

he-erg meal.m.s eat take-perf.m.s is

(He has eaten meal.) (Shah, 2015, p. 112)

(16) CP [TP O-ne - [*v**P ~~O-ne~~-[VP khanna kha $_V$]-lia$_{v*}$]-e $_T$]

Derivations (13) and (15), schematically described in (14) and (16) respectively, show that third person perfective transitive derivations usually allow ergative marking on the subjects. The schematic descriptions (14) and (16) show that (13) and (15) are derived

in a similar way according to (1b). Following is the derivational procedure which renders (15) (which is applicable to 13 as well).

The main verb *kha* merges with the IA *khanna* to form VP. This VP merges with *v* lia (from the root take)* to from *v**P. The EA merges with *v**P at Spec-*v** position. The *v**P merges with tense auxiliary *e* to form TP which merges with C to from CP. As soon as the T merges with C, the former derives agree and tense features from the latter. The ϕ-features of *v** and T are un-interpretable at the C-I interface, so they must be valued before Spell-out to the respective interface. As far as θ-roles are concerned, they are assigned to the arguments (i.e., IA and EA) by the heads which select them for initial merge. The V *kha* assigns θ-role *theme* to the IA *khanna*, and *v**assigns θ-role *agent* to the EA *O (he)*. The θ-role assignment mechanism makes no difference between nominative and ergative case systems.however, the difference lies in case assignment pattern. Unlike the case valuation mechanism of (1a), the subject NP in (15) is assigned inherent ergative case at the θ-position by the head *v**. Ura (2006) suggests modification in Chomsky's (2000, 2001) framework in which case cannot be assigned at θ-position by the θ-role assigning head. The assignment of ergative case by *v** does not fall under Agree operation because the subj does not fall in the Agree domain of *v**. Hence, inherent case assignment phenomenon is comparatively closer to θ-role assignment mechanism than structural case valuation mechanism (i.e., assigned under Agree operation). The ergative case assignment by *v** poses problems for deciding how the structural case is valued for the object NP/DP in an ergative derivation.

Within inherent case approach, there are conflicting views about the case valuation mechanism of the obj NP/DP when the higher NP/DP (i.e., the subj) is marked ergative case. Among leading proposals, Legate (2008) views that object is assigned covert accusative case by *v**, but Woolford (2006) and Mahajan (2017) assume that the obj NP/DP is assigned case from T under long distance Agree. The following discussion intends to decide which of the two functional heads T or *v** values the case of the obj NP/DPs in Punjabi ergative derivations; however, the phenomenon of person based split in case patterns is addressed before that.

Two types of split in case alignment are exhibited by Punjabi: aspect and person. The former type of split has been dealt with satisfactorily in section 4.1 and the analysis of the data conducted so far in this section. The following discussion dwells a little upon person based split and then returns to the case valuation mechanism on the obj NP/DP.

(17) Main khana kha lia/litta e/ai.

I meal.m.s eat take-perf (*v**) is

(I have eaten the meal.) (Shah, 2015, p. 111)

(18) Asaan kam muka lia e/ai.

we work complete take-perf.m.s (*v**) is

(We have finished the work.) (Shah, 2015, p. 111)

(19) Main/Asi/Tuu/Tusii kam kita.

I/we /you/you-pl work.m.s do-pst.m.s

(I/We /You/You (plural) worked.) (Bhatia, 1993, p. 86)

The data from (17) to (19) show that first and second person subjects do not allow ergative case even in perfective transitive derivations. The Derivations (13), (15), (17), (18), and (19) are all in perfective aspect, but (13) and (15) allow ergative case on subjects while (17), (18), and (19) do not. On first sight, it is easy to identify that (13) and (15) have third person subjects, but (17), (18), and (19) have first or second person subjects.

The sources of Punjabi data provide conflicting cases with respect to ergative case alignment on third person perfective structures. For instance, the structure (20) is grammatical for Shah (2015) but a similar structure (21) (i.e., with all factors common) is ungrammatical for Bhatia (1993).

(20) Ohnaan khana kha lia e/ai.

they meal.m.s eat take-pef.m.s is

(They have eaten the meal.) (Shah, 2015, p. 111)

(21) *Onaa (n) kam kita.

they work.m.s did-pst.m.s

(They worked.) (Bhatia, 1993, p. 86)

(22) Onaa (n)-ne kam kita.

they-erg work.m.s did-pst.m.s

(They worked.) (Bhatia, 1993, p. 86)

The transitive structures (20), (21), and (22) are derived with common factors with respect to ergative case (i.e., perfective aspect and 3rd person plural subject). Hence, they must behave similarly in relation to ergativity. However, according to Shah (2015) ergative may be dropped without any effect on grammaticality of derivation, but Bhatia (1993) considers the dropping of ergative as ungrammatical in (21). This study finds substantial evidence from data to resolve the conflict of dropping of ergative in (20) and (21). Although exhibiting a split case alignment pattern: nominative and ergative, Punjabi transitive derivations provide a uniform agreement pattern (23) which has conceptual significance for settling the person based split in ergative/nominative case patterns.

(23) In the structures with nominative case on the subject NP/DP, the heads (i.e., V, *v** and T) overtly agree with subj while in case of ergative case on the subj these heads overtly agree with the obj NP/DP instead of the subj. Hence, ergative case on subj blocks its agreement with V, *v** and T.

All transitive derivations discussed so far confirm (23); however, the derivations (24)-(26) are presented to illustrate this fact more clearly.

(24) O-ne guddi udaai.

he-erg kite.f.s fly-pst.f.s

(He flew the kite.) (Shah, 2015, p.99)

(25) O-ne such bolia.

he-erg truth.m.s speak-pst.m.s

(He spoke the truth.) (Shah, 2015, p.99)

(26). Kuri-ne kar vecciaa.

girl.s-erg house-m.s sell-pst.m.s

(The girl sold the house.) (Bhatia, 1993, p. 237)

In the transitive derivations (24) to (26), it is easy to notice that the main verbs *udaai* (flew), *bolia* (spoke), and *vecciaa* (sold) agree with the IA (objects) *guddi (kite), such* (truth), and *kar* (house) respectively. This agreement pattern also holds for functional categories *v** and T which have no overt morphological realization in (24)-(26); however, the agreement on V holds that in the case of ergative case on subject, the heads V, *v** and T agree with the obj instead of the subj.

In contrast to the agreement pattern surfaced in (24) to (26), the Punjabi transitive derivations with the nominative subjects allow the heads V, *v**, and T to agree overtly with the subj. This is easy to observe in (27) and (28) below.

(27) O buute putda (h)ai.

he plant.pl.m.s uproot-imperf(hab).m.s is

(He uproots plants.) (Bhatia, 1993, p. 244)

(28) O Kamm karegii.

she work.m.s do.fut.3rd.f.s

(She will do the work.) (Bhatia, 1993, p. 248)

Derivations (27) and (28) are derived according to the mechanism (1a) where the subject is valued nominative case by T. It can be observed in (27) and (28), in contrast to the ergative derivations, that the V and T agree with the subj instead of the obj. In (27), the singular V form *putda* and T auxiliary form *e*/*ai* agree with the singular subject *O (he)* instead of the plural object *butte (plants)*. In a similar way, in (28) the feminine verb form *karegii* agrees with the 3rd person feminine subject *O (she)* instead of the masculine object *kamm* (work). This distinction of agreement pattern can be observed uniformly in all ergative and nominative transitive derivations of Punjabi. Hence, (23) seems easy to assume. However, for reaching a comprehensive conclusion, it is significant to study agreement pattern in the transitive derivations which express perfective aspect and contain first and second person subjects (i.e., the structures which usually exhibit person based split). Structures (29) and (30) below are such derivations.

(29)	Tusi	khaana	kha	lia	e.	
	you.pl	mealm.m.s	eat	take-perf.m.s	is	
	(You have eaten the meal.)					(Shah, 2015.p. 112)
(30)	Assan	kam	muka	lea	si	
	we	work.m.s	finish	take-perf.m.s	was	
	(We had finished the work.)					(Shah, 2015, p. 115)

Interestingly, in (29) and (30) ergative does not surface because of person based split (i.e., the subjects are in first and second person plural which do not allow overt ergative marking), but V, *v** and T agree with the obj which is a hallmark of ergative derivations. The agreement pattern observed by (29) and (30) leads to the assumptions in (31) which seem helpful both in accommodating the difference between different dialects of Punjabi as mentioned in table 1 of chapter 1 and addressing the person based split in ergative/nominative case patterns adequately.

(31)

a. Punjabi has no person based split; rather, in the transitive derivations (i.e., in perfective aspect) with subj in first or second person, the ergative is not phonetically realized; hence, ergative may have a null presence.
b. In Punjabi perfective derivations which allow ergative on third person subjects, the first and second person subjects are also in ergative instead of nominative case.

After exploring the phenomenon of aspect and person based split-ergativity in Punjabi, the discussion returns to address some conceptual issues which arise due to the difference in the case assignment/valuation system of the two major cases: ergative and nominative. This study criticizes some earlier proposals for not providing a satisfactory mechanism to justify their stipulations. For instance, Ura (2001, 2006) stipulates that ergative is assigned/checked by the *v** to the EA at the θ-position and during this process the un-interpretable features of *v** are also checked; however, this study highlights a problem with Ura's proposal if viewed in light of current line of reasoning adopted in Chomsky (2008) which eliminates the significance of m-command relation after which the occurrence of features checking/valuation under spec-head relation is impossible. In light of this development, the question arises how the un-interpretable features of *v** can be valued by the subj NP/DP, sitting at Spec-*v** position, which does not come in the Agree domain of *v**. This is a significant problem which has not yet been addressed. There is no problem in assuming that ergative is assigned by *v** at the θ-position unlike structural cases nominative and accusative. However, this assumption does not entail that the assignment of ergative case at θ-positions, by the θ-role assigning head may also check the unvalued ϕ-features of the functional head *v**. Hence, this study assumes (32) (a) and (b).

(32)

a. The inherent (e.g., ergative) and structural (e.g., nominative or accusative) cases are assigned under different mechanisms. In structural case, Agree operation is induced by the un-interpretable ϕ-features of the *probe* (i.e., *v** or T) and matching interpretable features of the *goal* (i.e., NP's/DP's in

the domain of the *probe*). This Agree operation values the structural case features of the *goal* and ϕ features of the *probe*.

b. In ergative case, the functional head *v** may assign ergative case to the NP/DP at Spec-*v**, but cannot get its own features valued in return because the NP/DP does not fall in the domain of *v**, hence Agree cannot hold between the two.

Assumptions (a) and (b) in (32) raise further questions about case valuation mechanism of ergative derivations. An important issue is how the un-interpretable ϕ-features of functional heads *v** and T are valued if ergative case receiving NP/DPs are unable to value these features. The problem basically emerges because in ergative subj transitive derivations only one goal, the obj NP, is left for two probes *v** and T. For exploring a solution to this problem (33) is analyzed.

(33)	O (h)-ne	khat	likkh	lea	howe-ga.
	he-erg	letter.m.s	write	take-perf.m.s	be.fut-will

(He will have written the letter.) (Shah, 2015, p. 120)

(34) CP [TP Oh-ne $_{i}$-[*v**P ~~Oh-ne~~$_{i}$ - [VP khat likkh $_{V}$]-lea $_{v*}$] – howega $_{T}$]

To obtain the derivation (33), as schematically described in (34), the IA *khat* merges with the V *likhh* to form VP. This VP merges with *v** *lea* (from the root of take) to form *v**P. This *v**P merges EA at Spec-*v** to complete the argument structure. The *v**P merges with future tense auxiliary T *howe-ga* to from TP which merges with C to complete the CP. The EA subj *O* is raised to Spec-T position to satisfy the EPP feature of T. The IA obj *khat* (letter) is assigned *theme* θ-role by V and EA *Oh* (he) is assigned *agent* θ-role by *v** at the time of merge. The subj NP is assigned ergative case by the θ-role assigning head *v**. Now there are un-interpretable features of T and *v**, and structural case features of the IA obj NP which are left to be valued before spell-out to C-I interface. If (32) is assumed, the ϕ features of *v** are not valued by the subj NP which is not in the domain of *v**. The question arises whether the obj NP *goal* Agrees with *v**

probe or with T *probe*. At least one of the two heads *v** or T would be left without feature valuation. If the obj NP Agrees with *v** to value its structural case features as accusative, there would be no goal left to Agree with T to value its ϕ-features. If the same NP Agrees with T and receives nominative case value, the ϕ-features of *v** would remain unvalued. This situation entails the existence of default Agree features on one of the two heads: T or *v**.

Punjabi data on transitive clauses provide evidence of such derivations which contain no unmarked NP to Agree with T *probe*. In such derivations, the default Agree features on T become obligatory. Derivation (35) contains a clue to such phenomenon.

(35). Hakiim-ne mariiz-nuu vekhia.

doctor.m.s-erg patien.m.s-acc/dat examine-pst.m.s

(The doctor examined the patient.)

(Bhatia, 1993, as cited in Khan & Kausar, 2021)

In (35), the subject receives inherent ergative case from *v**. The object receives *nuu* marking which implies dative or accusative case. It remains to be settled that whether the obj is in marked with inherent dative case or its structural case features are valued as accusative. If it is assumed that obj has accusative case, (32) is automatically obtained. Contrary to it, if the obj is assumed to be in dative, (32) would demand default agree features on *v**. However, it is clear that there is no unmarked NP goal in (35) to Agree with T and to value its un-interpretable ϕ-features. Leaving the case of *v** to be settled after obtaining further evidence from data, (35) is an ample evidence to assume that T may have default Agree features in Punjabi transitive ergative derivations.

In order to accommodate derivations like (35) which have no DP/NP to enter into feature valuation Agree operation with a functional category T or *v**, Anand and Nevins (2006) propose that the un-interpretable ϕ-features may be valued by default 3rd person/singular/masculine ϕ-features. From this observation, they infer that a functional head possessing default agreement does not obligatorily assign case features to DPs/NPs. Although they provide evidence from Hindi, but a closer look at Punjabi data confirms

their stipulation. If (35) is modified in a way that subj and obj are both in plural form and the resultant derivations contain overt *v** and T to obtain (36), the overt morphology exhibits default agreement 3rd person/singular/masculine on the functional heads *v** and T.

(36)	Hakimman-ne	mariizan-nuu	vekh	lia	si.
	doctor.m.pl-erg	patient.pl-acc/dat	examine	take-pst.m.s	was

(Doctors had examined the patients.)

The Punjabi derivation (36) exhibits that in case of marked subj and obj the functional heads may have default agreement. It is clear to notice that both *v** and T have default overt agreement in (36) (i.e., 3rdperson/masculine/singular). Although these overt morphological agreement patterns have no role to play in narrow syntactic derivation, but their default occurrence is evidence of possible default ϕ features on the functional heads. This is one way to imply, among others, that case valuation by functional heads may be non-obligatory in Punjabi because of default Agree in certain grammatical situations. This stipulation, in light of the proposal of Anand and Nevins (2006), is significant but it requires more evidence on the grounds that in current minimalist framework overt agreement facts are supposed to play no role in narrow syntax. Because of this empirical lacking further evidence from both data and literature may be helpful to bridge the conceptual gap.

Ura (2001, 2006), dealing with aspect based ergativity, stipulates that in the languages which allow null-subject (i.e., pro drop languages), the Infl's/ (T's) case may not manifest in syntax. Although the terminology used by Ura needs to be updated; however, her stipulation is in line with Anand and Nevins (2006) with a stronger evidence. Ura's proposal imply that in null-subject languages the case valuation by the functional head Infl/T is non-obligatory. Bhatia (1993) observes about Punjabi: "All verbs have subjects-logical and grammatical. Nominal as well as pronominal subjects can be omitted only if they arc recoverable pragmatically, contextually (prior mention in the discourse, etc.) or syntactically (from verb agreement, imperative construction etc.)"

(Bhatia, 1993, p.85). Hence, Punjabi satisfies the condition imposed by Ura for non-obligatory case valuation by functional head. This fact leads this study to assume (37).

(37) Case valuation by functional heads T and *v** may be non-obligatory in some grammatical contexts.

In light of (37), it easy to assume about derivations like (36) that T may have default Agree features, but what about the Agree features of *v** and structural case features of the direct obj IA in such derivations. There are two major approaches adopted by the inherent case theorists: According to the suggestions of Legate (2008) the marked IA *marizzan-nuu* receives dative instead of accusative case. As the dative and accusative case marking is homophonous (i.e., *-nuu*) in Punjabi, this may be assumed, but then stipulation (32) of this study would force to induce that *v** has default Agree features as its ϕ features would not be valued under Agree operation with no structural case assigned by it. It implies that in case of unmarked NPs/DPs in the whole transitive derivations, both T and *v** may have default Agree features.

However, to stipulate default Agree features on *v** is not as simple as it is for T. There are both empirical and conceptual problems which come in the way of such stipulations for *v**. First, the EA in the domain of T is easy to drop in the case of null-subject languages like Punjabi, but the argument in the domain of *v**, the IA, is very difficult or impossible to drop. It implies that some further justification is required to assume the default agreement on *v**. Secondly, Punjabi data provides empirical evidence against Legate's (2008) proposal of dative instead of accusative case on marked direct objects IAs: *mariz-nuu and marizaan-nuu* in (35) and (36) respectively. An important test case, provided by Punjabi data, to decide whether a *-nuu* marked DP/NP is accusative or dative is that dative subjects retain *-nuu* marking while the accusative *-nuu* marked NP/DPs lose this marking in derived passive structures. This fact may be witnessed in the structures below.

(38)	Main-nuu	kurii	pasand	aaii.
	I-dative	girl	like	come-pst.f.s
	(I liked the girl.)			(Bhatia, 1993, p. 173)

(39) CP [TP Main-nuu - [*v**P ~~Main-nuu~~ - [VP kurii pasand aaii]-*v**]-T]

Derivation (38), schematically described in (39), is an experiencer structure. The subject *Main-nuu* is in inherent dative case which is raised to Spec-T position to satisfy the EPP feature of T. However, carrying inherent dative case, the NP *Mian* does not enter into probe/goal Agree operation with T. There are two possibilities: T may have default Agree or by long distance Agree T may enter into *probe-goal* relation with IA *Kurii*. The former possibility is preferable to the latter because if the latter is induced the Agree features of *v** would remain unvalued which is empirically more difficult to justify than the former situation where T has default Agree. So, it is assumed that *v* probe* enters into Agree with the IA goal, and T has default Agree features according to the possibility maintained by Chomsky (2008). Along with the feature valuation mechanism of (38), it is important to note that the dative subjects in experiencer derivations obligatorily allow *'-nuu'* marking. This is comparable to the derivation in (40) below.

(40) Hakiim tu mariiz vekhiaa giaa.

doctor-m.s by patient.m.s see-pst.m.s go-pst.passive.m.s.

(The patient was examined by the doctor.) (Bhatia, 1993, p. 173)

Derivation (40) is the passive form of (35) wherein the IA *mariiz-nuu* was marked with *-nuu*. In the derived derivation (40), the NP *mariiz* loses both *-nuu* marking and accusative case. This can be compared with the derivation (41), where the indirect object takes dative case which is retained in the derived passive form (42).

(41) O-ne kurii-nuu kaaka ditta.

she-erg girl.f.s-dat child-m.s give-pst.m.s

(She gave the child to the girl.) (Bhatia, 1993, p. 173)

(42) Kurii-nuu kaaka ditta giaa.

girl.f.s-dat child-m.s give-pst.m.s go-pst.passive.m.s

(The girl was given the child.)

It is important to observe that in the passive from (42) of (41) the NP *kurri* retains the marking -*nuu* as compared to the NP *mariiz* of (35) which loses -*nuu* marking in passive form (40). It implies that the direct object marking –*nuu* is different from -*nuu* marking on subj in (38) and indirect object in (41). Hence, -*nuu* marking on direct object in (35) is due to structural accusative case valued by *v** under Agree operation between *v** *probe* and the NP *goal* while the-*nuu* marking in (38), (41), and (42) is due to inherent dative case. In light of such evidence, this study assumes (43).

(43) The direct object (DO) (i.e, IA) enters into Agree relation with *v** in Punjabi ergative derivations. In this operation, the ϕ-features of *v** are valued and the DO NP/DP is assigned accusative case value which may or may not be realized in the form of an overt -*nuu* post-position.

There is further evidence in data to support that -*nuu* marking on DO is due to accusative instead of dative. It has been noticed that in di-transitive derivations, the dative marking on indirect objects blocks the accusative marking on DO. However, in case of more than one indirect object, the multiple -*nuu* markings on the multiple indirect objects remain possible. This can be witnessed in (44) and (45).

(44) * O-ne kurii-nuu kaake-nuu ditta.

he-erg girl.f.s-dat child.m.s-acc give-pst.m.s

(He gave the child to the girl.)

(45) O-ne main-nuu raam-nuu kataab den nuu aakhia.

he-erg I-acc Ram-acc book give-inf.obl for say-pst.m.s

(He asked me to give a book to raam.) (Bhatia, 1993, p. 174)

The ungrammaticality of (44) is due to the fact that dative –*nuu* marking on the indirect object *kurii* blocks the homophonous accusative -*nuu* marking on the direct object *kaake* (child). On the other hand, in (45), which is a biclausal structure, the multiple dative -*nuu* marking is allowed on multiple indirect objects. The comparison of ungrammaticality of (44) with grammaticality of (45) helps in establishing the difference

between dative -*nuu* and accusative -*nuu* marking. On the basis of this evidence, this study reaches the conclusion that direct object Agrees with *v** to receive accusative case value.

The following discussion critically examines the findings of previous studies in light of the renderings of this study in section 4.2. As mentioned in section 4.1, the literature can be divided into three major approaches with respect to comparison between ergative and nominative case alignment patterns: the first approach considers ergative as a structural case assigned by C/T domain; the second approach considers ergative as dependent case which is marked to the higher DP/NP if there is some unmarked DP/NP present in the lower c-command domain; the third approach considers ergative as inherent case assigned by *v/v** at Spec-*v/v** (i.e., the theta-role related position). These approaches have been discussed briefly in light of the findings of this study rendered by the analysis of intransitive (i.e., unergative and unaccusative/passive) derivations in section 4.1. The following part of this section discusses the three approaches in more detail in light of the evidence provided by transitive derivations.

Levin and Massam (1985), Bobaljik (1993), Chomsky (1993), Otsuka (2002), and Bobaljik and Branigan (2006), among others, view that ergative is the structural case assigned by the functional head T. In his seminal work to support this line of reasoning, Bobaljik (1993) proposes Obligatory case parameter (OCP) which decides the case in intransitive derivations. In line with case checking mechanism of early minimalism in UG, Bobaljik assumes under OCP that case is assigned under spec-head relation. Hence, ergative and nominative are assigned at Spec-Agr-1 (equivalent of Agr-S) and accusative and absolutive are assigned at Spec-Agr-2 (equivalent of Agr-O). In nominative languages, AgrS (1) phrase is active to assign case to subject NPs, so the subject would possess a nominative case. On the other hand, in ergative-absolutive languages, Agr O (2) phrase is active to assign case to the sole argument, so the subject of such languages would possess absolutive case. It is noteworthy that for Bobaljik ergative and nominative both are structural cases assigned by Agr-S under same mechanism. In the current minimalist framework as developed in Chomsky (2000 and subsequent works), it is very hard to assume that case can be assigned under spec-head relation. Furthermore, similar

pattern of case assignment for obtaining two distinct case alignment systems is highly problematic. This study finds enough evidence to reject the claim that ergative and nominative are assigned under similar mechanisms by the similar heads. There is evidence in data that ergative is allowed by factors which are saturated in *v** (i.e., aspect and agentivity). Moreover, if two cases are just similar why is there a need of different nomenclature? This study not only finds that all factors governing ergative are centered in *v**, but amongst a cluster of such factors ergative may depend upon the selection of a particular *v** element from the numeration. A question may arise how exactly aspect is centered in *v**. Punjabi data provides widespread evidence that aspect of a sentence is morphologically realized in a *v* element if it is overtly present in a sentence. The structures in (46) can illustrate this fact.

(46)

a. O-ne khat likh dittaa.
   he-erg letter-m.s write give-pst.m.s
   (He wrote the letter.) (Bhatia, 1993, p. 253)

b. O-ne khat likhiaa.
   he-erg letter write-pst.m.s

c. O ro ditta.
   he weep give-pst.m.s
   (He wept.) (Bhatia, 1993, p. 253)

It can be seen in (46) (a) and (c) that the perfective aspect of the sentences is manifested in the *v* element ditta (give) instead of the V elements *likh* (write) and *ro* (weep) respectively. There is no contrary evidence found in the structures where *v* is present overtly. This pattern of representation of aspect in *v* helps in assuming that in the absence of an overt *v* the aspectual suffix is attached to the main verb V by affix-hopping (i.e., after movement) as evident in (b) where in the absence of an overt *v*, the aspectual suffix *iaa* is attached to V *likh* as *likhiaa*.

Such evidenct help in rejecting the claim that ergative is just a structural case sourced from C/T domain like nominative. The problems left by Bobaljik's earlier work

were later attempted to be solved in the works like Otsuka (2002) and Bobaljik and Branigan (2003, 2006). However, owing to the conceptual problems in the basic assumption, the latter approaches were equally vulnerable to criticism. Otsuka attempts to modify Bobaljik (1993) by incorporating feature checking mechanism of Chomsky (1995b) with modifications. She proposes that case features of NP/DPs can be specified as ergative or nominative at numeration (before they enter into derivation). During the derivation these features may be checked by the matching features of the functional heads. According to her framework, the functional head T may check both nominative and ergative features of respective NP/DPs in respective languages, and *v* may check both accusative and absolutive case features of the respective NP/DPs. This framework of feature checking is highly problematic in current multiple spell-out framework of UG where it is assumed that un-interpretable features enter into derivation unvalued. It is during the derivation that they are valued by some functional head. Hence, Otsuka's proposal fails to provide any solid solution to the problem of maintaining some distinction between ergative and nominative case system.

Bobaljik and Branigan (2006), seeking evidence from Chukchi language, attempt to solve the problem by suggesting multiple case checking phenomenon wherein a head can check the case features of more than one NP/DPs. By their proposal, they obtain that difference between ergative and nominative system is that in the former little *v* is unable to assign case to the object NP making it obligatory for the NP to raise higher to spec-T position where it is assigned case. The same functional head T assigns case to ergative subject according to multiple case-checking ability of a functional head. This proposal is again problematic in that not all languages can possess such *v/v** elements which are unable to check/value the features of obj. In some recent works, Chomsky (2004, 2008) suggests the concept of multiple Agree, but such relation may hold between a *probe* with a complete set of ϕ-features and multiple *goals* with incomplete set of un-interpretable features. The induction of Agree features between multiple constituents which all possess complete set of ϕ-features is not possible. Hence, the suggestion of Bobaljik and Branigan (2006) seems problematic in view of the current minimalist framework.

Another approach initiated by Marantz (1991), extensively developed in Baker (2014, 2015), and adopted by Bittner and Hale (1996a, 1996b), Baker and Bobaljik (2017), and Coon and Preminger (2017) view that ergative is a dependent case which does not depend on the absolute position of an NP/DP or its relationship to some other functional head, rather it depends on the relative position of a particular NP to some other NP in a similar domain. For instance, if there are two NPs in the same c-command domain of a syntactic configuration as NP_1 and NP_2, NP_1 may be valued as ergative if NP_2 is not valued as some lexical case. Section 4.1 has already provided evidence to reject this view for split ergative languages like Punjabi where intransitive unergative derivations allow ergative to the sole NP_1 of the syntactic configuration when there is no NP_2 present in the domain of NP_1. This section further criticizes *Dependent Case* (DC) approach on the basis of evidence provided by the transitive derivations. It has been observed that a cluster of factors determine the ergative marking on subj NP/DP which cannot be reduced to a very simple condition as stipulated by the DC theorists. Ergative is linked to a particular θ-position and is licensed by a particular functional head *v**. This is wrong to assume that it does not depend upon the absolute position of an NP and the relation of the NP to a particular functional head. Punjabi data confirms that ergative is always assigned at Spec-*v** positions, which is an A-position. This condition never fails for ergative case even though the condition proposed by DC theorists fails in the case of unergative derivations in Punjabi and the similar languages. Another loose point in DC approach is that, like structural case approach, it does not provide a valid distinction between the valuation of nominative and ergative case. In case of the presence of an NP_2 in the same c-command domain, the NP_1 may either be marked ergative or nominative. The problem which remains to be settled is to explicate the difference between ergative and nominative case marking mechanisms.

Nash (2017) attempts to differentiate between nominative and ergative constructions by assuming, from Ramchand (2013) and Ramchand and Svenonius (2014), that nominative derivations have, as shown in (47a), a phase head called *Event* which controls the aspect like event. In nominative case alignment, the subject NPs are assigned nominative case at Spec-EventP (i.e., above *v*P) by the functional head T and the object NPs are assigned case by Event. The difference in ergative derivations are obtained by

the fact that there does not exist any EventP in such clauses and both subject and object NPs fall within *v*P which is c-commanded by the same functional head (i.e., T). In this way, the same functional head licenses the case on both object and subject NPs according to this pattern: "If there are two distinct NPs in the same phase such that NP_1 and NP_2, then value the case features of NP_2 as ergative unless NP_2 has already been marked for case" (Nash, 2017,p. 174) . The difference of nominative and ergative case assignment patterns in Gorgian, as illustrated by Nash, can be seen in (47) and (48) below. The examples in (b) and (c) follow the derivation patterns according to (a).

(47)

a. $[_{TP}\ T_{<CASE>}[_{EvP}\ DP\ \text{~~CASE~~}\ Ev\ _{<CASE>}[_{vP}v\ [\ldots..DP_{\text{~~CASE~~}}]]]]$ nominative system

b. Vano-Ø xaT-av-s mankana-s
Vano-nom draw-TS-3S car-acc
Vano is driving a car.

c. Vano- Ø Cam- Ø-d-a kada-s
Vano-nom eat-Ts-past-3S cake-acc
Vano was eating a cake. (Nash, 2017, pp. 174-176)

(48)

a. $[_{TP}\ T_{<CASE>}[_{vP}\ DP\ _{ERG}v[\ldots..DP\ _{\text{~~CASE~~}}]]]$ ergative system

b. Vano-m xaT-a mankana- Ø
Vano-erg draw-aor3s car-nom
Vano drew a car.

C. Vano- Ø Cam-a kada- Ø
Vano-nom eat-aor3s cake-nom
Vano ate a cake. (Nash, 2017, pp. 174-176)

Nash argues that nominative case is assigned in Georgian just like English. However, the ergative split in Georgian leads him to assume that the ergative derivations lack the functional head Event phase –a property which makes ergative a dependent case assigned according to the pattern suggested by Marantz (1991) and further elaborated in

Bobaljik (2008), Baker and Vinokurova (2010), Baker (2014) where two nominal in the same domain (i.e., subj and obj) compete for the same functional source for getting their case checked (Bittner & Hale, 1996a). According to this framework, the same functional head T checks nominative and ergative case. According to Nash's proposal, the difference lies in the presence of the EventP in the two types of derivations. Nominative derivations possess it and ergative derivations lack it.

Nash's proposal is problematic in light of the Interface conditions proposed by Chomsky (2004, 2008) where it is viewed that the C-I and SM interfaces require only two functional heads C and *v**. Stipulation of any intervening phase head is not only redundant, but needs some independent justification. Despite of this redundancy, Nash does not discard the presence of a light *v** in the derivation. If it is so what should be the mechanism of valuation of the un-interpretable features of *v** is a question that poses problems for Nash's (2017) and Ramchand's (2013) proposals.

The third line of reasoning, as adopted by Woolford (1997, 2006, 2017), Aldridge (2012), Anand and Nevins (2006), Laka (2006, 2017), Legate (2006, 2008, 2012, 2017), Massam (2006), Mahajan (2012, 2017), and Sheehan (2017), view, despite of varying details, that ergative is inherent case assigned by *v**/*v* to the external argument at its θ-position. As section 4.1 has discussed some major works from this approach briefly, the following part of this section discusses their renderings into more detail (i.e., in light of the findings obtained from transitive derivations). In continuity of section 4.1, the findings of this section urge to agree with the basic assumption of inherent case approach (i.e., ergative is inherent case assigned from *v*/*v**); however, problems lie in the detailed mechanisms provided by the inherent case theorists.

Among initial works, Woolford (1997) proposes that ergative is inherent case assigned by *v*/*v** to EA and in such derivations the obj is marked nominative by T. Retaining the basic assumptions of earlier works, Woolford (2006) proposes that apart from the broader structural/non-structural distinction, the non-structural cases can be further divided into inherent and lexical case types. She rejects the validity of some diagnostic tests (e.g., θ-relatedness and regularity) for deciding between structural and non-structural case by maintaining that the results rendered by such tests may be

misleading. More significant is her distinction between inherent and lexical cases to capture the different mechanisms of assignment within non-structural cases. A relatively regular inherent case is licensed by little *v* to EA while idiosyncratic lexical case is licensed by individual verbs to the internal arguments/themes. This study criticizes Woolford's suggestions on two grounds. One is that different diagnostic tests may provide evidence for reaching a conclusion about status of case in some syntactic configuration; however, the decisive factor should be the interface conditions imposed by the C-I and SM interfaces. Hence, Woolford deals with the problems she identifies in a traditional framework that are distant from the current requirements of SMT. Secondly, Punjabi data provide evidence that ergative has properties of both inherent and lexical case as stipulated by Woolford. For instance, ergative in Punjabi fulfills the regularity criterion as it is always assigned to external argument by the light *v*. It also depends upon the individual lexical choice of particular light *vs.* There are light *vs* which do not allow ergative amidst the presence of all other factors of ergative case. Hence, ergative shares the properties of both inherent and lexical case. This study claims that straightforward distinction of inherent vs. lexical case, as proposed by Woolford, is not applicable in the case of all ergative contexts.

Legate (2008) in her seminal work on ergative case stipulates that in some ergative languages which she labels as ABS=DEF, the subject is assigned ergative by little *v* and the object is assigned accusative case by the same head. In such languages, nominative is not assigned to any NP/DP by the T. This is in contradiction with Chomsky's (1995b) claim that nominative is an un-interpretable feature on T which must be checked for convergence of derivation. To cope with the problems posed by unavailability of nominative case in ergative clauses of some languages, Legate (2008) assumed, in line with Pesetsky and Torrego (2001) and Svenonius (2001), that nominative case is an interpretable feature on T. According to this mechanism T probes for a *goal* to assign it nominative case, but if it fails to identify such goal the derivation proceeds unaffected.

This study finds evidence in favor of Legate's proposal about the assignment of ergative and accusative to external and internal arguments respectively by the same

functional head *v*/*v**. However, her assumption regarding nominative as an interpretable feature on functional head T is problematic and very easy to reject on the basis of interface conditions described by Chomsky in his post-2000 research. In the current framework, Chomsky (2000, and subsequent works) assumes that case is not a feature of functional heads, but an un-interpretable feature on the goal NPs which is valued by a *probe* T or *v** with un-interpretable θ-features under Agree operation. The value of the structural case of NP depends on which probe values the case feature. In light of this mechanism Legate's proposal is problematic that case is an interpretable feature on a functional head. Any such condition fails to satisfy SMT by describing the properties of the interfaces in a wrong way.

Anand and Nevins (2006) try to accommodate the case checking of T in ergative derivations without departing from the conception of un-interpretability of features. To provide a solution to the problem (i.e., there is no NP available for Agree with T), they assume that the features of T are un-interpretable unless the numeration contains $T_{checked}$. This is similar to the proposal of Lavine and Freidin (2001) about accusative-instrumental derivations in Russian. This approach implies that in usual circumstances the Agree features of T are un-interpretable, but numeration may provide T elements with checked features. In case of ergative languages where T probe could not find a NP goal to Agree with, numeration may provide some T which contains checked features. Furthermore, Anand and Nevins (2006) view that there are two basic parameters: obligatory *v* case parameter and obligatory T case parameter which may be either *on* in some language or *off*. For Hindi, the language closest to Punjabi in case marking/checking pattern, they view that both the parameters may be off. In that situation, case checking is neither obligatory for *v* nor for T. Their proposal regarding $T_{checked}$ agrees with the principle stance of Legate (2008) in a different way; however, they do not depart in the basic assumption of un-interpretability of features as suggested by current minimalist approach. The proposal of $T_{checked}$ is defective in light of Chomsky's (2004, 2008) proposals about the Agree features of T where he views that the features of T are derived from C. This property deprives T from being a phase head. It is categorically assumed that T derives its features from C after merge of C. In light of this stipulation, it is hard to assume that T

enters into derivation with checked Agree features. Hence, the concept of T_{cheked} may be problematic on conceptual grounds.

Laka (2017) adopts a rather strange position regarding ergative case by maintaining that ergative grammars are uniform and there is no need to assume any split to nominative in them. Led by the views discussed in Bobaljik and Wurmbrand (2008) and Polinsky and Preminger (2014) that the relationship between morphological and abstract case has increasingly become tenuous in the contemporary studies, Laka proposes that if two cases are dissociated from each other, ergative can be considered as a morphological phenomenon that can be discussed squarely outside the domain of case theory. She further strengthens her argument from Chomsky (2000) that Agree operation are not attracted by case checking requirements, as it was assumed in the earlier works on minimalism, rather the un-interpretable ϕ features are the primary motivation for such operation. Both claims of Laka need a revisit as the split ergativity is a widely observed phenomenon; for instance, the South Asian languages like Urdu-Hindi and Punjabi exhibit both nominative and ergative syntactic configurations. Split ergativity cannot be denied for a wide range of such languages. This study identifies evidence from Punjabi data that person based split can be reconsidered as overt and covert ergative realization; however, aspect based split is an indispensible phenomenon to capture the marked agreement and case mechanism differences in split configurations of the language. Furthermore, Laka's assumption that ϕ features are the primary source for induction of Agree operation without any attraction by the case checking requirements contains half truth in that the Agree operation cannot be induced without the activation of an NP goal, and a goal remains active until its case features are valued. Hence, this study criticizes Laka's proposals for their overgeneralization of the facts about split ergativity and case features.

Sheehan (2017) reiterates the basic assumptions of inherent case approach: ergative is related to the argument merged externally at Spec-v position, the presence of ergative is independent of transitivity, there may be no derived/non-thematic ergative subjects, and ergative case is not lost in the cases where structural case is unavailable. More than a general review of these basic assumptions, she adopts *parameter hierarchy*

approach for conceiving the variation in ergative/accusative case alignment in terms of parametric variation in the properties of the functional head *v/v** across languages-that is in line with Borer-Chomsky conjecture. The findings of the study confirm the parameter hierarchy approach and the pivotal role played by the varying properties of the functional head *v/v** resulting in the variation between ergative/accusative case patterns; however, there are ergative contexts where the unavailability of an unmarked NP in the domain of T causes problems for the un-interpretable features on T that needs to be addressed in terms of the current feature valuation mechanism for achieving SMT- an important issue ignored by major studies under inherent case approach.

In her recent work, Legate (2017) defends the inherent case thesis by highlighting that ergative case is assigned amidst multiple factors which center around *v*P; hence, ergative is sourced from lower domain of the clause. She poses a strong challenge for the ergative as higher (domain) case approach by maintaining that any stipulation of ergative as case of CP/TP domain must be supported by differentiating between the ergative and nominative when they both are sourced by CP/TP domain. If any proposal fails to provide an account of the difference, the case assigned by CP/TP domain should be attributed as nominative.

The studies of Levin and Massam (1985), Bobaljik (1993), Chomsky (1993), Bitner and Hale (1996a&b), Otsuka (2002), Bobaljik and Branigan (2006), and Baker and Bobaljik (2017) do not provide a satisfactory account to differentiate between ergative and nominative while proposing that ergative is the case of higher CP/TP domain. Hence, this study, on the basis of evidence gathered from data, stipulates, in line with inherent case theorists like Legate (2008, 2017), Woolford (2006, 2017), and Anand and Nevins (2006), among others, that ergative is inherent case sourced by the functional head *v**/*v* in the lower domain of the complete derivational unit. However, this section has identified the problems left by the accounts of inherent case theorists which are majorly the valuation of un-interpretable ϕ-features on the functional heads *v** and T and the case of IA in transitive derivations. The crux of the line of reasoning adopted by this study, on the basis of data analyzed in this section, is that in ergative derivations the functional heads may assume the default agreement features in those languages which allow

dropping of the relevant argument (i.e., subject or object). It is based on the evidence that the assignment of ergative case by *v**/*v* to the EA sitting at Spec-*v* position does not occur under Agree operation; hence, the ergative case is assigned like a θ-role assignment mechanism which does not value the un-interpretable features of functional head *v*/*v**. It further implies that ergative case assigning *v*/*v** may further become *probe* to search for an active *goal* to value the un-interpretable features under Agree operation. So, the obj IA may receive accusative case value from *v** and T may assume default agreement according to the parametric property of the language.

4.3 Non-Finite T_{def} Derivations

A comparative study of the syntactic derivations of Punjabi and English which possess non-finite T_{def} elements (i.e., T with incomplete set of ϕ- features) is presented in this section. Infinitival constructions including *raising, passive,* and Exceptional Case Marking (ECM) are the major derivations which include such T elements. The control infinitival derivations are assumed to have non-defective T elements similar to the T of finite T clauses. The simplest criterion of defining defective and non-defective T can be derived from Chomsky (2001a) according to which T selected by the category with complete set of ϕ-features (i.e., C or *v**) are non-defective T_{comp} which appear in finite and control infinitival clauses while the T elements selected by any other category, for example V, are T_{def} which appear in raising, long distance passives and ECM derivations.

Before setting off for analysis of T_{def} derivations, a little explanation is needed why control infinitival are assumed to have non defective T. Radford (2004) assumes this on the basis that such clauses contain a null PRO subject and they are introduced by a null infinitival complementiser. He identifies a structural similarity of CP+TP+VP between two clauses: a) "I will arrange for them to see a specialist." and b) "I will arrange [null C] [PRO] to see a specialist". To strengthen the claim, he further provides evidence from co-ordination facts as in c) "I will arrange [*to see a specialist*] and [for my wife to see one at the same time]" (Radford, 2004, pp. 71-72). As only parallel structures can be conjoined, the presence of an overt Complementiser *for* in the coordinated clause and an overt subject *my wife* suggest the presence of a null complementiser and null subject in the italics clause.

In feature valuation mechanism, T $_{def}$ behaves differently from T. Having an incomplete set of un-interpretable ϕ-features (possessing person features only), the former type of T cannot value the structural case features of a nominal which has a complete set of interpretable ϕ features. The T $_{def}$ probe matches with the nominal goal only in person features. In this process the un-interpretable person features of T are valued but structural case features of the nominal remain unvalued because of lacking a complete set of ϕ-features on *probe*. Instead of inducing separate *probe-goal* Agree operations, Chomsky (2008) adopts multiple agree mechanism, in line with Chomsky (2004), where a goal values features of all matching elements in a search domain sequence. In two-member probe-goal chain the intrinsic features of *goal* value the unvalued structural case features of *probe*. This may be generalized to a sequence of elements where the intrinsic feature of *goal* value the unvalued features of the *probe* and other matching elements with incomplete set of features (e.g., infinitival etc.)

Unlike infinitives in *raising* and ECM derivations, it is assumed, according to Chomsky (2000, 2001a, and 2001b) and Radford (2004), that infinitives in control derivations possess complete ϕ-features and EPP features which are satisfied by a PRO subject. Derivation (1), schematically described in (2), exhibits the phenomenon of PRO subject and ϕ-features in a control infinitive structure.

(1) They have decided to help you. (Radford 2004, p. 240)

(2) They have decided [$_{\alpha}$ PRO to ~~PRO~~ help you].

In (1), as shown in (2), the verb *help* merges with the complement *you* to form VP *help you* which merges PRO subject at Spec-V position. The complete VP merges with the non-finite T *to* to from non-finite TP. This TP merges with control predicate *decide* to form VP. This VP merges with *v* to form *v*P which merges the EA *they* at Spec-*v* position. The *v*P merges with finite T *have* to form finite TP which merges with C to from CP. The EA of the main clause is raised to Spec-T position to satisfy the EPP feature of finite T. It is assumed that in the infinitive clauses the PRO is raised from Spec-V position to Spec-T position to satisfy the EPP features of the non-finite T. It is also assumed that non-finite T in control derivations has a complete set of un-interpretable ϕ-features which are valued under Agree with PRO subj which contains

complete set of interpretable abstract ϕ-features. In this Agree operation, the PRO is assigned abstract null case. Hence, it is assumed that infinitive derivations with *raising* and *passive/accusative* predicates contain T_{def} but *control* predicates contain T (i.e., with complete set of ϕ features).

It is important to note that English participles do not show gender and number features overtly; however, their Punjabi counterparts demonstrate both gender and number features overtly as shown in structures (3) below.

(3)

a. Munda nasda hoiaa aaiaa.
boy-m.s run-ppl.m.s being-m.s come-pst.m.s
(The boy came running.)

b. Munda baithia hoiaa bolia.
boy-m.s sit-ppl.pst.m.s being-m.s speak-pst.m.s
(The boy spoke while sitting.)

In both (3a) and (3b), the participles *nasda (running)* and *baithia (sitting)* respectively assume masculine singular form to agree, in gender and number, with the subject *munda*. There is no difficulty in assuming that the Agree between subject *munda* and participles *nasda* and *baithia* in (5a) and (5b) respectively values the incomplete ϕ-features in participles but leaves the structural case features of the subject *mudna* unvalued and active which may be valued by some *probe* with a complete set of ϕ-features. The overt realization of gender and number features in Punjabi participles confirms that participles possess some of the ϕ- features. Similar fact may be assumed about English participles with difference that they do not show such features overtly. The structures in (3) support the basic assumption that participles possess incomplete set of ϕ-features and they can't value the structural case features of a *goal* in Agree operation.

(4) He appears to be thought to be certain to win the race. (Radford, 2004, p. 249)

(5) [$_{\beta}$ He appears [α_3 ~~he~~ to ~~he~~ be thought] [α_2~~he~~ to ~~he~~ be certain] [α_1~~he~~ to ~~he~~ win the race]].

Derivation (4) is a *raising/participial passive* structure. The schematic description (7) illustrates that the derivation is obtained by raising of subject *he* in successive cyclic steps which shows EPP feature on T_{def} elements. In (4), the IA *the race* merges with V *win* to form VP which merges with *v** to form *v**P. The IA is assigned θ-role by V while its ϕ-features are valued by the *v** under Agree operation. The *v**P merges the EA *he* to complete the argument structure. This complete *v**P merges with non-finite T_{def} to from first non-finite TP in the derivation. The T_{def} possesses only person features from the complete set of ϕ-features. The person features of T_{def} Agree with the interpretable person features of the EA *he*. This Agree operation values the un-interpretable person features of T_{def}, but leaves the structural case features of the goal *he* unvalued because of ϕ-incomplete at the probe. The EA *he* is raised to Spec-T_{def} to satisfy the EPP features on T_{def}. A similar mechanism of feature valuation occurs at α_2 and α_1 phase levels: the complete set of interpretable features of the goal *he* values the un-interpretable person features of T_{def}; however, the unvalued features of the goal *he* remain visible until the strong phase level β where the finite T probe with complete set of ϕ features matches with the goal *he* completely in ϕ-features but partially (i.e., only in gender and number but not in person) with the adjectival participles *thought* and *certain*. This matching of features in a sequence (probe-goal-participle) induces multiple Agree which values the unvalued features on *probe*, *goal* and participles. Hence, the derivation converges at interface levels as all the features are valued before transfer to the interfaces.

(6) There are expected to remain some problems. (Radford, 2004, p. 249)

(7) [β There are expected [α ~~there~~ to remain some problems].

Derivation (6), schematically described in (7), is passive participle structure with expletive subject *there*. At α phase level, the unaccusative V *remain* merges with the obj IA *some problems* to form VP which merges with the non-finite T to form TP. The T_{def} probe Agrees with the IA *some problems* to value the person features of the former. This operation does not value any structural case features on the goal because of a defective probe. To satisfy the EPP features of T_{def}, the expletive *there* is merged at Spec-T_{def} position. It is important to note that at this stage of derivation that T_{def} can't value the unvalued person features of *Expl* because the latter is not in the domain of the former.

This is a strong evidence that EPP and Agree features/operation are separate matters (i.e., EPP can be satisfied without feature matching and Agree can be induced without satisfying EPP). The α phase, thus formed, merges with the passive participle *expected* to from VP which merges with finite tense auxiliary *are* to form TP. The finite T probe finds only one goal in its domain with a complete set of interpretable ϕ-features (i.e., the obj). In the way of long-distance match and Agree between finite T probe and obj goal, Expl *there* occurs with person features only; hence, intervention effect is not induced. So, under multiple Agree operation the probe matches with *expl* and the goal obj. The interpretable ϕ-features of goal value the un-interpretable features of both *expl* and the probe T under long distance multiple agree. The obj is assigned structural case value nominative which is determined by the probe T. The expl *there* is raised to Spec-T position to satisfy the EPP features. The derivation converges at interface levels because all the un-interpretable features are valued.

Bhatia (1993) mentions that Punjabi non-finite structures are formed by two types of operations: *infinitivalization* and *participialization*. The former type adds *-naa* suffix to the verbal stem (e.g., *jau-naa (going))* resulting in the loss of morphological realization of ϕ, tense, and aspects features. For instance, past continuous finite form *aa riaa si* (*was coming*)) which contains morphological evidence of number, person, gender, tense and aspect can be compared with the non-finite form *aau-naa (coming/to come)* which loses overt realization of these features. As compared to it, the latter operation *participialization* results in different forms like *parhdaa hoiaa/bathia hoiaa/jaaun valaa mundaa* (the studying/the seated/ the going boy). Unlike the infinitival, the participle agree with the following NP in number and gender (Bhatia, 1993, p. 50, 51). This property of participles leads to the assumption that the Punjabi non-finite participial forms also lack person features just like English participial. Following part of this section presents the analysis of Punjabi infinitival and participial derivations.

(8) Praa-ne jaaun-no inkaar kiitaa.

brother.m.s-erg go-inf refusal do-pst.m.s

(The brother refused to go.) (Bhatia, 1993.p. 45)

(9) CP[β TP Praa-ne $_{i}$[*v*P ~~Praa-ne~~$_{i}$ [α TP PRO T jaaun-no]-[VP inkaar kitta]-*v*]-T]

Derivation (8), schematically described in (9), is a control structure with ergative subject. The infinitive form *jaaun* morphologically adds the non-finite post position *–no* to complete the infinitive verb form which merges with a null T to form α TP. This TP merges with complex verb form *inkaar kitta* of the matrix clause to form VP which merges with *v* to form *v*P which merges the EA subj at Spec-*v* position. The EA is assigned ergative case by *v* at the θ-position at the time of merge. This EA is raised to Spec-T position at β stage of derivation to satisfy the EPP of the finite T. The finite T in the derivation assumes default Agree features because there is no unmarked nominal goal in the domain of finite T to value its un-interpretable ϕ-features owing to the fact that EA subject has already been assigned inherent ergative case by the little *v* at the time of merge. This situation of default Agree on finite T is a strong evidence to assume that in control infinitival Punjabi derivations, the null T Agrees with a PRO subject (i.e., merged at Spec-T of α-phase level), as shown in (9), to value its abstract un-interpretable ϕ-features at α stage of derivation.

(10) O apney bharaa-nuu laban jaa rea e/ai
he his brother-*acc* find go ing.m.s is
(He is going to find his brother.) (Shah, 2015, p. 103)

(11) CP [β TP O$_{i}$ [*v*P-[VP -[α TP ~~O~~$_{i}$ [VP apney bhraa-nuu laban $_{V}$]]-jaa $_{V}$] rea $_{v}$] - e $_{T}$] (Khan & Kausar, 2019, p. 6)

Derivation (10), schematically described in (11), is different from (8) in taking a DO in non-finite clauses. There is evidence that (10) is a raising derivation. A strong clue is that (10) can be turned into a passive derivation but (8) cannot undergo a similar process. Radford (2004) highlights parallels between accusative, passive and ECM/raising derivations. The control infinitival derivations usually can't be passivized. The (in)ability of these structures for passivization can be seen in (12) below.

(12)

a. *Praa-tu jaaunno inkaar kiitaa.
brother-loc(from) go-inf refusal do-pst.ms
(*from brother refused to be gone.)

b.	O-da	bharaa	O-de kolo	laban	jaa	rea	e.
	His-gen.	brother	him-inst.	find	go	ing	is

(His brother is going to be found by him.)

The attempt for *passivization* of (8), as shown in (12a), fails resulting in ungrammatical derivations, but the passivization of (10) as shown in (12b) remains successful resulting in a grammatical derivation. On the basis of such clue, if it is assumed that (10) is a raising derivation then the subject *O (he)* must merge initially at the stage of non-finite stage α. Khan and Kausar (2019) provide the following procedure for merge of (10). The V *laban* and DO *apney bhraa* merge to form VP which subsequently merges with non-finite T_{def} and *v** to form TP *v**P respectively. The Subject *O* (he) merges at Spec-*v** position. The *v** probe Agrees with the goal DP *apney bhraa* to value the structural case of the goal (as accusative) and un-interpretable ϕ-features of the probe. The α TP merges with the V of the matrix clause β *jaa* (go) to form VP which merges with the light verb *rea* to form *v**P which merges with the finite T auxiliary ai/*e* to form TP which merges with C to complete the CP. Agree features of C are transferred to T which searches for a goal for valuation of features. The subj *O* present at Spec-T of α is active to become the goal. The procedure is obtained and the un-interpretable features of both sides are valued under Agee operation. The subj is further raised to Spec-T to satisfy the EPP features of finite T in β. An important thing to note in (10) is the presence of marked DO with overt accusative *–nuu* marking in α phase which is headed by a non-finite T. This marking strengthens the assumption that DO is valued accusative case by *v** instead of T because the latter of the two functional heads is not present in its finite form to value case for the DO.

(13)	Kitabann	chapen	lei	tayyar	nei.
	Books	print-ppl.pass	to	ready	aux –pres

(Books are ready to be printed.) (Shah, 2015, p. 105)

(14) CP [TP Kitabaan T [α [ADJP-[T_{def} P -[VP Kitabaan chapen]- lei T_{def}]-$tayyar_{Adj}$]-nei_{T}]

(Khan & Kausar, 2019, p. 6)

Khan and Kausar (2019) mention the following procedure for derivation of (13), schematically described in (14), which contains a passive participial α phase. The passive V *chapen* and The DO *kitabaan* merge to form VP. The non-finite T auxiliary *lei* (to) is then merged to obtain α level headed by non-finite T_{def}. The adjective *tayyar* (ready) merges with α TP as its complement to form AdjP which merges with the finite T element *nei* to form TP. The un-interpretable ϕ-features of T can only be valued by a goal like *kitabban* which possesses complete set of interpretable ϕ-features. In the way of Agree between probe T and goal *kitabban* comes the adjective *tayyar* and participle adjectival *chapen*. Owing to lacking a complete set of ϕ-features, these adjectival elements can't intervene between the long distance Agree of finite T in β and DO *kitabban* in α; instead of that, a multiple Agree operation in induced which values all the un-interpretable features in a sequence: [probe-adjective-participle-goal] as [(finite T) nei-tayaar-chapan-kitabban]. The goal is valued nominative structural case.

A point of comparison between Punjabi infinitival and participial elements is that the latter type of non-finite derivations can be reduplicated but the former cannot undergo the similar process. This can be seen in the case of (15) to (17) below.

(15) Munda nasdaa aaiaa.
boy.m.s running.ppl.m.s come.pst.m.s
(The boy came running.) (Bhatia, 1993, p. 69)

(16) Munda nasdaa nasdaa aaiaa.
boy.m.s running.ppl.m.s running.ppl.m.s come.pst.m.s
(The boy came running.) (Bhatia, 1993, p. 69)

(17) *O apney bharaa-*nuu* laban laban jaa rea ai/e.
he his brother-*acc* find.inf find.inf go ing is
(He is going to find his brother.) (Shah, 2015, p. 103)

It is evident that in derivation (15) the participle *nasdaa* and the subj *Munda* in agree in number and gender, but not in person. It maintains that participles in Punjabi possess number and gender, but lack person features. This is the reason that participle can be reduplicated as in (16). On the other hand, the infinitival can't be reduplicated, as evident in the ungrammaticality (17) (i.e., the derived form of (10)), because of

possessing complete set of abstract ϕ-features. The reduplication facts strengthen the Multiple Agree phenomenon as stipulated by Chomsky (2004, 2008). Capability of participial to reduplicate and incapability of infinitival for similar operation induces that the former category is different from the latter in terms of ϕ-features; hence, participial can reduplicate and may invoke multiple Agree for valuation of un-interpretable features in one fell swoop, but infinitival can neither reduplicate nor qualify for multiple Agree.

4.4 Adjunction

The data analyzed so far in the previous sections deal with the basic argument structure as exhibited in a complete clausal CP derivation (i.e., CP [EA TP [~~EA~~ v/*v**P V IA]) which may be obtained completely in transitive and experiencer (analyzed in section 4.2) and partially in unergative, unaccusative and passive derivations (analyzed in section 4.1). There are also derivations (analyzed in section 4.3) that may contain T_{def} elements depending upon their selection by particular heads (e.g., V). However, all such derivations are obtained by a primary operation Merge which is supposed to take two already formed syntactic objects, α and β, and form new syntactic object {α, β}. In this operation, one of the two objects, the head which selects the other as its complement, projects. The operation induced in such a way is completely symmetrical and cyclic. The label of the maximal projection obtained by the Merge of α and β is determined according to the head of the projection: if α selects β as its complement, the label of the projection would be determined as L (α) and vice versa. According to NTC, the Merge of α and β leaves the two syntactic objects unchanged. In more recent tradition (Chomsky, 2000; and subsequent works) this type of merge is termed as set merge.

The linguistic data, however, provides evidence of such categories which cannot be incorporated in the course of syntactic derivations by the simple set Merge of two objects because they do not fall under the usual head-complement relation necessary for set Merge. Neither selected by some head as complement nor being head of some complement, adjuncts are such categories which have posed problems for UG researchers in any attempt of accommodating them under the usual course of syntactic derivation because of their asymmetrical nature. It seems important to examine such attempts and problems faced by them before analysis of the data containing adjuncts.

Two major approaches which attempted to accommodate adjunction phenomenon in the normal course of syntactic derivation deserve discussion. First approach can be titled as *late-insertion* or *acyclic* approach. Lebeaux (1988) argues that the elements that enter into derivation by adjunction should be exempted from cyclicity conditions. Stepanov (2001) adopts a similar line of reasoning by stressing that late insertion of adjuncts in not only an option but an obligatory requirement; hence, adjuncts not only can but must enter into derivation late. Boskovic (2013) welcomes such suggestions by providing evidence that how they can be adjusted under *bare phrase structure* of Chomsky (1995a) when they are not adjustable in a GB type framework where insertion of a lexical item is possible only before SS. In *bare phrase structure*, the principle of *Full Interpretation* requires that every expression should be interpretable at both PF and LF interfaces. Boskovic (2013) views that in this framework late insertion can be allowed by assuming that phonologically null elements can be inserted at LF while semantically vacuous elements can be inserted at PF. An example of the latter case may be the late insertion of the semantically dummy auxiliary *do* at PF. Boskovic (1998) views that the French *wh-in-situ*, where interrogative C is assumed to be inserted at LF, can fall under the former case.

The proposals of Lebeaux (1988), Stepanov (2001), and Boskovic (1998, 2013) might find some place in *bare phrase structure* but in a framework based on derivation by phase and SMT (Chomsky 2000; and subsequent works) their proposal may face challenges. Late insertion is highly problematic when all the three cycles relating to separate components: phonological, semantics and syntax are supposed to proceed in unification instead of separate cycles and the derivation is transferred to the interfaces simultaneously at the spell-out. The phase impenetrability condition holds that an earlier phase is impenetrable at a latter phase except the head and edge of the earlier phase. More than this the SMT does not allow acyclic insertion of any element in the derivation. Language cannot be a perfect design if it allows acyclic merge of certain elements. These arguments pose problems for the late insertion approach adopted by Lebeaux, Stepanov, and Boskovic.

Another influential view for Adjunct has been that they are specifiers to their respective functional heads. For instance, according to Cinque's (1994) Analysis, adjectives are specifiers always occupying pre-nominal position across the languages. The post nominal linear order position of adjectives, across languages, is derived by the head movement of the noun to the left of the specifer. Alexiadou (2013) illustrates this phenomenon by comparing the pre-nominal adjectives of English and post nominal adjectives of French where the noun precedes in word order because of leftward head movement of the noun. Both *adjective as specifier* and *noun's head movement* approaches have been criticized in literature for making some wrong predictions. Lamarche (1991), Bouchard (2002), Alexiadou (2001), and Cinque (2010) counter the phenomenon of head movement of noun. Dealing with the linear order issue, Alexiadou (2013) raises a very significant issue that why should the linear order be determined at syntax. Alexiadou postulates a number of functional projections about which overt morphological evidence is missing. Instead, there should be some semantic and cognitive basis for such phenomenon as suggested by Sproat and Shih (1987, 1991). The internal pair Merge operation proposal has a relevance with the view adopted in Alexiadou (2013) and Sproat and Shih (1987, 1991) that the linear ordering, in case of adjunction, may be obtained by some requirements of C-I interface.

For adverb type of Adjuncts, Cinque (1999), Alexiadou (1997) and Laenzlinger (1998) are the representatives of syntactic approach to linear order. Analyzing multiple adverb structures, Cinque (1999) provides typology of adverbs wherein linear order of adverbs depends upon a universal hierarchy determined by the phrase structure. The adverbs occupy unique specifier positions of the functional projections. In such configurations, different adverbs acquire different positions with respect to functional heads and the set of functional projections may be licensed either by the head or via the adverb at the Spec positions. If both co-occur, the Spec-head agreement is obtained. As no Agree relation is possible between specifier and head, in the view of current minimalism, Cinque's proposals of Spec-head agreement and the role of spec in determining the projection are problematic.

Coutrary to the syntactic motivation behind the linear order of adverbs, Haider (2000) views that adverbial hierarchy is coded twice: first in syntactic structuring and then in the algorithm of semantic representation. To avoid the redundancy between dual coding, Haider proposes that the relative order of adverbs is an interface effect of the mapping of syntactic domains on the semantic representation. On the empirical side, the functional specifier approach of Cinque (1999) has also been criticized by Ernst (2002, 2007) and Nilsen (2004). The major argument, for countering specifier approach, is that linear order of adverbs is not always rigid and they may acquire varying positions. Ernst (2002) maintains that the linear order of adverbs is determined by the interactions of the compositional rules for various adjuncts and their lexico-semantic requirement. These proposals carry weight for locating the motivation of linear ordering at the semantic interface; however, they leave some conceptual problems for adopting a redundant mechanism. A satisfactory solution is, however, required to answer how syntax can fulfill the requirement of word order imposed by C-I (semantic) interface. This study finds evidence contrary to *adjunct as specifier* approach from Punjabi data where the rather free movement options urges that the tricky element can't be restricted to specifier position; hence, it attempts to provide a satisfactory solution by proposing Internal Pair Merge mechanism to which the discussion returns in a while.

In order to cope with the persistent problem caused by the asymmetry of adjunction, Chomsky (2001b) proposed that adjuncts enter into derivation by pair Merge instead of set Merge. These elements are only relevant at C-I semantic interface because of expressive power and duality of that interface level. A variety of Merge is possible to generate expressions which are interpretable at semantic interface. Hence, an adjunct *a* is pair merged to some syntactic object P resulting in the pair merge of the two which can be represented as <a, P>. This merge appears asymmetric in that *a* is not selected by P, but just adjoined to it. The question arises how the adjuncts are spelled-out to the interfaces. Chomsky assumes that the elements adjoined to each other by pair merge are converted into set merge at the time of Spell-out to interfaces by an operation called SIMPL. This SIMPL operation may occur after Transfer to Spell-out to interfaces because the linear order is a matter of Phonetic interface, but this would create problem in a way that if SIMPL occurs after transfer to phonetic interface a separate mechanism

would be needed to transfer to semantic interface. Therefore, it is assumed that operation SIMPL converts <a, P> merge into {a, P} at the time of transfer and the adjoined element *a* is ordered and spelled-out with *P*. Hence, *a* is spelled out with the *P's* spell-out.

(1) [wh- which [[NP picture [p of Bill]] [ADJ that John liked]]] did he buy wh-
(Structure 11 in Chomsky, 2001b, p. 18)

Chomsky illustrates derivation in (1) to review Lebeaux's (1988) proposal about late insertion of adjuncts. It is obvious in the derivation that linking of *Bill* to *he* causes condition C (of Binding Theory) effect while linking of *John* to *he* does not. The effect for (*he, Bill*) is expected by (obligatory) reconstruction, but not its obviation for (*he, John*). That would follow if adjuncts are late merged at the root, but complements are not. This is compatible with the fact that complement *p of Bill* is s-selected category but adjunct ADJ *that John liked* is not. Chomsky (2001b) views that late insertion of adjunct solves some problems, but it causes many complications. Above all the acyclic late Merge of adjuncts does not satisfy SMT which requires that Merge should always be cyclic to maintain language as a good design. For this reason, Chomsky tries to maintain the cyclic character of Merge even in the case of pair Merge of adjuncts. To obtain cyclic character, he stipulates (2) proposing that adjuncts are merged cyclically and at the time of Spell-out the pair is converted into set form for transfer to interfaces by SIMPL operation.

(2) In <a, P>, *a* is spelled out where P is. (Principle (12) in Chomsky, 2001b, p. 20)

There are some complex structures, however, which appear to pose problems for stipulation (2).

(3) We saw [NP a painting] yesterday [ADJ from the museum].
(4) I gave him [NP a painting] yesterday [ADJ from John's collection].
(Chomsky, 2001b, p. 21)

Derivations (3) and (4) are problematic in that the adjunct ADJP seems to be extracted from their respective NPs resulting in the dissociation of ADJPs *from the museum* and *from John's collection* from the NP *a painting* in (3) and (4) respectively

which raises problems in assuming (2). Fox (2002) and Nissenbaum (2000) propose that the problem of unusual extraction can be overcome if it is assumed that the NPs in (3) and (4) covertly undergo QR (quantifier raising) to the right and then adjunct ADJP is merged acyclically. In review to their proposal, Chomsky (2001b) views that their solution apparently solves complexities, but it causes some conceptual problems. First of all, it proposes acyclic Merge and violation of (2) which should be anyway avoided to provide a cyclic account of Merge. Secondly, the rightward QR is also conceptually problematic and if it exists at all it is not part of Narrow Syntax just like linear ordering. Hence, their view should be revisited to provide a cyclic account of Merge. So, Chomsky provides the instances of derivations containing qualifications and afterthoughts where such expressions are generated independently. The derivations in (5) and (6) (equivalent to 16 (i) and (ii) in Chomsky (2001b, p. 22)) are such versions of (3) and (4) respectively where the issue of acyclic Merged is coped with.

(5) We saw [NP a painting] yesterday, (that is,) a painting (one) [ADJ from the museum].
(6) I gave him [NP a painting] yesterday, (more precisely,) a painting (one) [ADJ from John's collection] (Chomsky, 2001b, p. 22)

Chomsky views that in (5) and (6) the NP *a painting* is associated to adjoining phrases and the occurrence of NP in usual cases can undergo ellipsis to result in (3) and (4). If it is assumed that (5) and (6) underlie (3) and (4), the issue of acyclic Merge is solved and the requirement of maintaining cyclic Merge is obtained with utmost proximity to SMT. Hence, principle (2) is established to maintain that an adjunct can't be dissociated from the phrase it is adjoined to. If adjunct surfaces some disjoint linear order, it implies that at the surface structure the adjoining phrase undergoes ellipsis which can be recovered in some structures like (5) and (6). The following part of the section analyzes English and Punjabi data in light of Chomsky's theory of adjunction.

(7) [Jo mundaa nayuu yaark vicc raindaa ai]
rel. boy.m.s New York in live.prst.m.s is
o Ø mera dost ai.
cor. Ø my friend is
(The boy who lives in New York is my friend.)

(8) [Jo mundaa nayuu yaark vicc rainda ai]
rel. boy.m.s New York in live.prst.m.s is
o mudnaa mera dost ai.
cor. boy my friend is.

(9) O mundaa [jo nayuu yaark vicc rainda ai]
cor. boy.m.s [rel. New York in live.prst.m.s is
mera dost ai.
my friend is

(10) O mundaa mera dost ai
cor. boy.m.s my friend is
[jo nayuu yark vicc raindaa ai]
rel. New York in live.prst.ms is

(Bhatia, 1993, pp. 54-55)

Derivations (7) to (10), four different word orders of a similar structure, contain an adjectival relative clause which modifies the DP *O mundaa* (*that boy*). As adjectival relative clause is not selected as a complement by any head, it falls under the phenomenon of adjunction. It is easy to observe that from (7) to (9) the relative clause *jo nayuu yaark vicc rainda ai* remains adjacent to adjoining DP either preceding it as in (7) and (8) or succeeding it as in (9). Hence, (7) to (9), principle (2) is strictly observed. It has been noticed that such pattern of placing the modifying relative clause is more frequent in Punjabi language. However, in (10), which is less common but grammatical, the adjunct relative clause is dissociated from the DP *O mundaa*. The question arises how the apparent acyclic late insertion can be avoided for (10) to maintain principle (2) and to remain close to SMT. The separate analysis of the relative clauses from (7) to (10) reveal that it is not difficult for derivation (10) to invoke underlying structures like (5) or (6). It is evident in (8) that the relative clause contains the actual NP *mundaa* along with the relative particle *jo* as *jo mundaa* (i.e., equivalent to English *which boy*). This occurrence of *mundaa* in (8) does not drop the same NP from matrix clause which surfaces as *O mudna mera dost ai*. In (7), (9), and (10), however, the NP is dropped from either of the

two clauses relative or matrix. The co-occurrence of NP *mundaa* in (8) strengthens Chomsky's claim about (3) and (4) and validates (2) as well. Hence, it is assumed for (10) that relative clause also contains the main noun *mundaa* which the relative clause modifies, but it undergoes a null realization. The actual form of (10) is thus (11).

(11) O mundaa mera dost ai [jo ~~mundaa~~ nayuu yark vicc rainda ai]

There may remain confusion, however, that whether the occurrence of the NP *mundaa* which undergoes a null realization is the actual NP to which the relative clause is adjoined. This confusion occurs because of the precedence of relativizer *jo* over the NP *mundaa* in (7), (8) and (11). To avoid the confusion, Chomsky's proposal can be explicitly adopted by assuming the actual form of (10) as (12).

(12) O mundaa mera dost ai, aho, ~~O mundaa~~, [jo ~~mundaa~~ nayuu yark vicc rainda ai].

In (12), it seems easy to assume that the multiple occurrences of the NP *mundaa* may undergo ellipsis and the acyclic late insertion for (10) may be avoided to satisfy SMT.

It is worth noting here that Kayne (1994) views relative clause as complement of D. Illustrating the phenomenon by the analysis of the sentence *John bought the picture of himself that Bill saw*, he assumes that *the picture of himself* is not a constituent. Instead, *picture of himself that Bill saw* is a constituent distinct from *the*. In that case, D *the* is the head which takes the relative clause CP *that Bill saw* as its complement; furthermore, *picture of himself* is supposed to raise from the object position of *that Bill saw* to Spec-CP position to obtain the linear order *the picture of himself that Bill saw*. Apart from the fact that distinction of head D *the* from its usual complement NP *picture* seems very hard to assume, there are other clues in the structure which makes Kayne's proposal rather problematic. There is no confusion in observing that reflexive *himself* is bound by *John* instead of *Bill* so there is no possibility of the merge of *picture of himself* as the complement of *saw* and then its raising to the Spec-CP position. In case of obtaining the CP that *Bill saw picture of himself*, the reflexive *himself* will be bound by *Bill* yielding different meanings from *John bought the picture of himself that Bill saw*. A more crucial problem arises in regarding the object of the V *bought*. If the D is assumed to be distinct

from the NP *picture of himself*, how can it be assumed that a DP without a nominal complement is the complement of the V *bought*. Lastly, there is possibility of elimination of relative phrase *that Bill saw* from the structure as in *John bought the picture of himself.* In such case there is no possibility of distinction of D *the* from the NP *picture of himself* and there is no place from where the NP *picture of himself* may be assumed to raise. In light of such evidence, this study finds no reason to assume in line with Kayne's proposal that relative clauses are the complements of D.

A wide range of literature accepts adverbs and adjectives as adjuncts for not being the categories selected by some head. At the current stage some more adverbial and adjectival derivations are analyzed from Punjabi.

(13)

a. Oh parhda parhda saun gea.
   he read-ppl read-ppl sleep go-pst.m.s
   (He went to sleep while reading.) (Shah, 2015, p. 125)

b. *Oh parhda saun saun gea.
   He read.ppl sleep sleep go-pst.m.s
   (He went to sleep while reading.)

(14) C[TP Oh -[<parhda parhda>~~Oh~~ *v*P- [VP saun]-gea$_v$]-T]]

Derivation (13) (a), schematically described in (14), is an unergative structure containing reduplicated adjunct *parhda parhda*. The reduplication of adverbial supports the argument that adverbs are adjuncts as usually in declarative CPs the complements are not reduplicated as illustrated in (13b) where the attempt for reduplication of the complement *saun* results in an ungrammatical structure. However, this fact needs to be probed into further. Coming to how the derivation is obtained, it can be seen that V *saun* merges with the light verb *gea* to form the *v*P. As the *v* is unergative, it does not need any IA obj. This *v*P merges with the EA *O* to complete the argument structure of an unergative *v*P. This *v*P is adjoined to the reduplicated adjunct *parhda parhda* by a pair Merge operation which is different from set merge in that it renders the adjunct syntactically inert causing no syntactic difference to the *v*P with which it is merged. The *v*P merges with T to form TP which merges with C to form CP. The strong phase level

is achieved after the merge of C. The strong phase level was not achieved at the stage of *v*P because the *v* of unergative could not constitute a strong *v**P phase. Now to value the un-interpretable ϕ-features, derived from C, T Agrees with the subj *Oh* and values its structural case as nominative. To satisfy the EPP features of T, the subj is raised to Spec-T position. At the time of spell-out to the interfaces, the SIMPL operation converts the pair Merge into set Merge and along with the rest of the derivation the adjunct is spelled-out to SM and C-I interfaces. At C-I interface the adjunct is interpretable like other interpretable expressions.

(15)	Main	do	ku	mahinian	to	Punjabi	parhana
	I-1st.s	two	about	month-pl	for	Punjabi	reading-ppl
	likhna		sikh	rahi	han.		
	writing-ppl		learn	ing-prog.f.s	am		

(I have been learning to read and write Punjabi for about two months.)

(Bhardawaj, 1995 p. 125)

(16) CP[TP Main $_i$ [<do ku mahinian to>~~Main~~$_i$*v*P [VP [T_{def}PPunjabi parhanalikhna]-sikhV]- rahi$_v$]-v]- han$_T$]

Derivation (15), schematically described in (16), is a CP which contains adjunction of the time adverbial <do ku mahinian to, *v*P> to the *v*P. The derivation is obtained by the following procedure. The non-finite participle verb forms merge together to from the compound re-duplicated non-finite verb form *parhna likhna* which selects the NP *Punjabi* as the complement of the phrase. This VP merges with the null non-finite T_{def} to form the infinitive phrase TP. This TP merges with the finite V *sikh* to form VP which merges with the aspectual light verb *rahi* to form *v*P which merges with the EA *main* to complete the argument structure. This *v*P is modified by the time adjunct which is adjoined to it by a pair Merge operation which causes no syntactic change to the derivation which continues in successive cyclic fashion to merge further with the finite T auxiliary *han* (am) to form TP which merge with null C to form CP. T derives complete set of un-interpretable ϕ features from C and becomes the probe which searches for some goal to value the unvalued features on both sides. In the nearest domain falls the EA *main*, so T probe Agrees with this goal and values the un-

interpretable features of probe and structural case features of the goal as nominative. The *v** probe Agrees with the obj *Punjabi* and the non-finite T in multiple Agree operation to value the un-interpretable features on all the elements in a sequence and to value the structural case features of the goal as accusative. In this derivation, the principle (2) is maintained easily as the adjunct is not dissociated from the adjoined element at the time of spell-out. Adjunct is just converted from pair Merge into set Merge before spell-out to the two interfaces. So, it is easily available at S-M interface for ordering and at C-I interface for interpretation.

The Punjabi adjunct derivations analyzed so far are relatively easy to accommodate under the phenomenon of successive cyclic Merge. However, there are derivations which pose problems for principle (2) and cyclic merge. Owing to flexible word order in languages like Punjabi, the dissociation of *a* and P appear more frequently as compared to English like languages where discourse/pragmatic facts allow free order only in peculiar situations. In the following part of this section, the derivations are analyzed in which adjuncts, or the elements adjoined to them, undergo word order variation quite flexibly and seem to demand stipulation of a satisfactory mechanism for adjustment in the successive cyclically proceeding computational procedure of language.

(17)

a. Tussi o-nuu kataab kio ditti?
you-2nd.pl he-dat.pp book why give-pst.f.s
(Why did you give him a book?)

b. Tussi o -nuu kio kataab ditti?
you-2nd.pl he-dat.pp why book give-pst.f.s
(Why did you give him a book?)

c. Tusi kio o-nuu kataab ditti?
you-2nd.pl why he-dat.pp book give-pst.f.s
(Why did you give him a book?)

d. Kio tusi o-nuu kataab ditti?
why you-2nd.pl he-dat.pp book give-pst.f.s
(Why did you give him a book?) (Bhatia, 1993, p. 28)

The structures in (17), (*a*) to (*d*), are analyzed in detail in section 4.5 with respect to wh-dependencies; however, they are presented here to exhibit the flexible movement of adjuncts in syntactic structures. The adjunct k-element *kio* (who) is scrambled almost sentence last to sentence initial position to render grammatical derivations every time. It is even interesting that the adjunct may acquire sentence last position to render a grammatical derivation (18).

(18)	Tusi	o-nuu	kataab	ditti	kio?
	you-2nd.pl	he-dat.pp	book.f.s	give-pst.f.s	why
	(Why did you give him a book?)				

Structures (17) and (18) show that Punjabi belongs to the class of languages, like its other South Asian counterparts (e.g., Urdu-Hindi), where scrambling of certain constituents is very frequent to obtain free word sequence (It is worth noting that the free movement of adverbial k-element seems difficult to consider under wh-movement dependencies as section 4.5 provides ample evidence to support *wh-in-situ* facts about The Punjabi language). The free movement of the adverbial k-element *kio* (who) (i.e., (17) and (18)) makes it very hard to accommodate the adjuncts into the specifier or complement position. The question arises how the free scrambling of adjuncts can be adjusted in the normal course of syntactic derivations. Some facts about scrambling may prove beneficial for finding a satisfactory solution to the problem. Kidwai's (2000) assumption that leftward scrambling of arguments is an XP-Adjunction operation may be considered. She assumes that leftward scrambling is a positional movement to a focus position in narrow syntax immediately dominated by *v*/VP. Hence, scrambling has a morpho-syntactic motivation. Kidwai's detailed mechanism and conceptualization of scrambling as a phenomenon of narrow syntax may be vulnerable to criticism; however, her basic assumption can be utilized for a conceptual solution to the problem of free word order.

Before we adopt the basic assumption of Kidwai that leftward scrambling is XP-adjunction, the problems in her detailed framework must be highlighted. It seems very difficult to assume, in line with her mechanism, that scrambling is always to a FocusP positions immediately dominated by the *v*/VP. The problem arises when an XP is

scrambled to a position beyond pre-verbal position or any position. In languages exhibiting scrambling phenomenon (e.g., Urdu-Hindi, Punjabi etc.), the arguments as well as adjunct XPs may raise above the pre-verbal position which is usually considered focus position. For instance, in (17) and (18) the adjunct *kio* may be raised to both the front most and the last position of the clause. For accommodating the word order variation in Punjabi, the stipulation of a focus position immediately dominating the verbal phrase is redundant and insufficient. Owing to this empirical problem, only the basic assumption may be derived from Kidwai that leftward argument scrambling is XP-Adjunction, and this may be extended to the phenomenon of any sort of leftward scrambling.

Following this course of reasoning, an immediate question arises: if scrambling is XP-adjunction, how can it be adjusted in normal course of syntax (e.g., by pair Merge). It may be assumed that in the case of scrambling an element from within the derivation can be raised from its base position to adjoin to some other element. If so, how the dissociation of *a* from P in <*a*, P> can be accommodated to satisfy the concern for maintaining cyclic merge and remaining close to SMT. This entails that a mechanism of movement of Adjuncts should be formulated to accommodate unusual operations like scrambling.

This study proposes that Chomsky's (2001b) basic assumption about adjunction as pair Merge cannot prove beneficial for solving the conceptual problems unless some mechanism is stipulated to accommodate their unusual movement in a structure. If adjuncts demand a separate type of Merge (i.e., pair Merge), then why shouldn't there be a separate mechanism for their movement and raising to some element other than the element to which they are initially adjoined to: an Internal pair Merge operation equivalent to Internal set Merge. The urge for this separate mechanism comes from the requirement of accommodating the phenomenon of free word order in Punjabi and similar languages within the domain of normal course of syntactic derivations.

The syntactically unusual operations like scrambling are motivated by discourse/pragmatics related factors which are interpretable at C-I interface or some factors beyond it. The unusual word order suggests that narrow syntax provides no site

for scrambled constituents; therefore, an extra mechanism is needed to accommodate such phenomenon. As the urge for scrambling comes from discourse and pragmatic interfaces, this study assumes contrary to Kidwai (2000) that there is some morpho-syntactic motivation for any such operation, and that syntax may provide any position to accommodate such constituents. This contradiction from Kidwai does not pose any problem in accepting the basic assumption that scrambling is XP-adjunction, rather contra morpho-syntactic motivation claim strengthens her basic assumption by placing the motivation of XP-adjunction in some factors outside narrow syntax and bringing the framework more in line with Chomsky (2001b). Simply, if scrambling is XP-adjunction, the movement operation can be motivated by factors interpretable at C-I interface. To strengthen the urge for a separate mechanism of movement, the following data from Punjabi may provide empirical evidence.

(19) Gurbacan kar giaa
Gurbacan-m.s home go-pst.m.s
(Gurbacan went home.)

(20) Kar Gurbacan giaa.
Home Gurbacan-m.s go-pst.m.s
(Gurbacan went home.)

(21) Kitthe Gurbacan giaa?
where Gurbacan-m.s go-pst.ms.
(Where did Gurbacan go?)

(22) Gurbacan giaa kitthe?
Gurbacan-m.s go-pst.m.s where
(Where did Gurbacan go?) (Bhatia, 1993, p. 27)

Derivations (19) and (20) are declarative but (21) and (22) are interrogative. However, all these grammatical derivations exhibit the scrambling of elements to the left (as in (20)) as well as to right (as in 22)). In (20), the element *kar* is moved to sentence initial position while in (22) the adverbial k-expression is moved rightward to post-sentential position. It is very hard to assume such movement as morpho-syntactic movement. Bhatia (1993) views that this position is focus related and the rightward

movement strengthens the focus effect even strongly as k-expression *kitthe* is comparatively more focused in (22) than (21). For (17), Bhardawaj (1995) suggests similar facts that the sentence initial position of the adverbial is due to focus and emphasis facts. This flexibility of movement of constituents in such derivations strengthens the idea to stipulate a mechanism for such type of extra syntactic movements.

The focus related free movement of constituents in a sentence does not, however, induce that any element can be put anywhere without any motivation. This fact can be witnessed in non-finite derivations which exhibit relatively rigid word order constraints than the finite clauses.

(23) O -da kal Parkaash-nuu e dassnaa thiik
He -of.gen yesterday Parkassh-acc this tell-inf right
naii sii.
neg was
(It was not right for him to tell it to Parkash.)

(24) Parkaash-nuu o -da kal e dassnaa thiik
Parkassh-acc he -gen yesterday this tell.inf right
naii sii.
neg was

(25) Kal O -da Parkash-nuu e dassnaa thiik
yesterday he -gen Parkash-dat this tell.inf right
naii sii.
neg was

(26) *O da kal e dassnaa Parkash-nuu thiik
he gen. yesterday this tell-inf. Parkash-dat right
naii sii.
neg. was

(27) *O -da Parkash-nuu e dasnaa kal
He gen.m.s Parkash-dat.pp this tell.inf yesterday
thiik naii sii.
right neg was (Bhatia, 1993, pp. 52-53)

Derivation (23) exhibits the usual word order of a complex construction containing a non-finite TP *kal Parkash nuu e dassnaa*. From (24) to (27) either of the two constituents the indirect object *Parkash-nuu* or adverbial *Kal* is displaced from its canonical position in (23). The indirect object in (24) and the adverbial in (25) is successfully moved leftwards to sentence initial position while in (26) and (27) both indirect object and adverbial, respectively, fail to move rightward contrary to the movement of k-expression in (22). The difference lies in that in (22) the k-expression was post-positioned form within the matrix clause while in (24) and (23) the pre-positioned constituents are extracted from a subordinate non-finite TP. It is a fact that focus is a matter of matrix clause instead of non-finite clause. It results in that when scrambling of constituents is relatively free in matrix clauses as manifested in (19) to (22), it is relatively bound in non-finite TPs which lack focus features.

(28) Uthe oh apna college da kaam karda ai.
there he his college of work do-pres(hab).m.s is
(There he does his college work.)

(29) Uthe tusi betho.
there you.2nd.pl sit.imperative
(You sit there.)

(30) Uthe tusi ki karna ai?
there you.2nd.pl what do-m.s is
(There, what do you have to do?)

(Bhardawaj, 1995, p. 117)

Shah (2015) observed that in Punjabi the adverb usually follows subject in linear order. This canonical linear order implies the hierarchical adjunction of the adverb to the VP. In (28), (29) and (30), the adjunct (adverb) is positioned at the front of the clause. Strangely, for (29) it may be assumed that instead of leftward movement of adjunct *Uthe (there)*, it is subject *tusi (you)* which assumes rightward movement to assume pre-verbal focus position, but what about (28) and (29) where no rightward scrambling of subject may be assumed at pre-verbal position. The adjunct *uthe* in these structures assume sentence initial position which is very difficult to accommodate in canonical

syntactic cartography: CP [TP [*v*P [VP]]]. This situation, therefore, urges for a mechanism of unusual movement and raising of constituents during the syntactic derivations.

In light of survey of the data conducted so far for examining the unusual placement of constituents in syntactic derivations, whether it is scrambling or some other type of adjunction, this study proposes that the phenomenon of movement operation Internal Merge (IM), which has previously been applied to set merge only, may be extended to pair merge as well. The computational procedure of language may allow Internal pair Merge to accommodate the free movement of adjuncts. This proposal extends upon Chomsky's (2001b) assumption that Initially adjuncts are pair merged <a, P>, and then at the time of spell-out a SIMPL operation transfers the pair merge into set Merge {a, P}. The initial pair merge of *a* to P is an operation equivalent to External Merge EM. As the pair Merge causes no syntactic change to P when the adjunct *a* is adjoined to it, and neither of the two elements project, there may be an Internal Pair Merge as well. This Merge is motivated by factors which are not interpretable at narrow syntax, so it may accommodate some problematic phenomena (e.g., the unusual positioning of constituents). This proposal may yield considerable conceptual benefits by solving very big problems in the way of achieving SMT (i.e., in the case of adjuncts and similar free moving constituents) and may provide a rather better solution for coping problems like late or acyclic Merge. It also solves the matter of free scrambling of constituents in languages like Punjabi. The important tenets of the proposal may be following.

(31) There is an Internal Pair Merge operation between the two elements <*a* and P_1> which are already present in the derivation.

(32) Internal Pair Merge may apply in parallel to Internal Set Merge.

(33) Internal Pair Merge does not induce any cross over/intervention effect which is relevant in syntactically driven operation: Internal set Merge.

(34) At the time of Spell-out the internal pair Merge is transferred into set Merge for simultaneous Spell-out to both SM and C-I interfaces.

(35) The internal pair Merge falls under the copy theory of movement. The copy left by Internal pair Merge is interpretable at C-I interface.

There are syntactic derivations in languages (that exhibit free word order) like Punjabi where the free movement of certain elements poses problems for any syntactic operation to accommodate them. The Punjabi structure in (36) illustrates this phenomenon very strongly.

(36)	Kataab	tai-nuu	diti	sii	kis-ne?
	book	you-dat	give-pst.f.s	was.f.s	who-erg
	(Who gave you the book?)				(Bhatia, 1993, p. 27)
(37)	Kis-ne	tai-nuu	kataab	diti	sii?
	who-erg	You-dat	book	give-pst.f.s	was
	(Who gave you the book?)				(Derived from 36)

The unmarked word order for (36) is (37) where the k-expression (equivalent of English wh-expression) *kis-ne* (who) occupies sentence initial position. However, in the former derivation which is the topicalized version of the latter, the k-element undergoes a movement to sentence final position. The sentence final position of a subject k-expression, which is a sentence initial constituent if it is assumed that k-expressions remain *in-situ* in Punjabi, poses problem for narrow syntax to provide any slot for such type of movement. This problem is further strengthened by Chomsky's (2001b) disapproval of rightward quantifier raising (QR). In the wake of such conceptual problems imposed by empirical evidence, there is no problem in assuming in line with the proposals (31) to (35) of this study that that k-expression in (36) undergoes XP-Adjunction by a syntactically inert right ward Internal Pair Merge operation which may be motivated by discourse factors (i.e., interpretable at C-I interface). The Internal pair Merge is transferred to set Merge at the time of Spell-out to C-I and SM interface. As derivation (36) belongs to Punjabi questions containing a k-expression which are dealt with in detail in section 4.5, the Internal Pair Merge proposal of this study may gather further evidence from there.

4.5 Wh-dependencies

This section deals with the comparison of wh-movement dependencies in Punjabi and English. In continuity of the basic framework adopted in previous sections, section 4.5 also bases the analysis on the framework stipulated by Chomsky (2008) in *On Phases* (*OPh)*. Before coming to the analysis of the wh-data, the major tenets of wh-phenomenon in *Oph* are delineated briefly.

The two phase-heads C and *v** play a crucial role in triggering the movement (=Interenal Merge (IM) in *Oph*) of wh- expressions. The IM operations are forced by these phase defining heads instead of the categories like T and V which are selected by the phase heads C and *v** respectively. T is neither a phase head, nor does it possess some phase like properties, rather it derives its properties from C. The phase defining heads have two features: Edge feature EF and Agree features which are at the core to capture the overall *wh-movement* phenomenon.

With respect to movement, the distinction of Edge and Agree features on phase defining heads covers the traditional A-A' distinction. Both A and A' movements are triggered by the features of C or *v**. For the sake of convenience, the application of these features is defined for C which can be applied on *v**. The Edge features on C trigger A' movement while Agree-features of C, inherited by T, and EPP features on T trigger A movement (Agree is possible without movement which is applied only when satisfaction of un-interpretable EPP features of the functional head T is required. Hence, the composite IM would satisfy both Agree features and EPP features in one move). This duality of movement A' and A is motivated by the semantic duality at the C-I interface. The application of two different types of movements A' and A respectively can be schematically described in the following way.

Supposedly, H is a phase defining head. Its EF can raise a *wh-element* without any stay at an intermediate landing site which could induce an intervention effect. It implies that if H is C, it can raise a wh-element form Spec-*v** without an intermediate stay at Spec-T position. It is not required that the wh-element first moves to Spec-T position and then to Spec- C position to yield a non-uniform A-A' chain. The EF of C raise the wh-element to Spec-C position and the Agree features of C inherited by T and EPP features

of T raise an unpronounced copy of *wh-element* to Spec-T position. This mechanism yields two distinct uniform A and A' chains triggered by different features on the same head C. This manner of derivation has significant consequences. First is that it eliminates the concept of non-uniform mixed A-A' chains. Secondly, in the current framework, the status of any movement A or A' is not determined by the movement of the moved element from a particular structural position in the course of derivation, but it depends upon the manner in which an element is moved by the force of a distinct feature on a phase head.

An important question arises here why it is good to eliminate the concept of non-uniform mixed A-A' chains? Chomsky (2008, p. 18) presents a significant evidence from Phase Interpretability Condition. Referring to the derivation (1), the object *who* is raised to Spec-C from the edge of the lower *v** phase by the EF of C, an A' movement, and the subject *John* is raised to Spec-T by Agree features derived from C: an A-movement. A problem might arise if T were assumed to be an independent probe (as head of an independent phase), with respect to intervention effect, as the subject *John* crosses the lower copy of the object *who*. A solution to this problem may be provided by assuming that T is not the phase head and both A and A' movement are induced by C in parallel. Hence, the A' chain behaves uniformly in a way similar to A chain: only the head of the full chain causes the intervention effect. This can be illustrated through the detailed analysis of (2) "Who did John see?" (Chomsky, 2008, p. 18) schematically described in (1).

(1) C[T[John *v**[see who]]] (Structure 15 in Chomsky, 2008, p. 18)

(2) Who did John see?

To obtain (2) from (1), the EF of *v** raises *who* to Spec-*v** from where it is raised by EF of C to Spec-C position. This successive cyclic movement of A' yields a uniform A'-chain. Parallel to this movement operation, the Agree features of T, inherited from C, raise the subj *John* to Spec-T position. The subj crosses over the lower copy of *who* without any intervention induced. This is only possible if A'-chain behaves in a manner similar to A-chains where only the heads of the chains can induce the intervention effect. As the copy of *who* crossed by the EA *John* is not the head of the chain no intervention

effect is obtained. This cross over effect yields another consequence that EF and Agree operation may apply in any order (with any operation first or last), or they may apply parallel to each other without any problem.

On conceptual grounds Chomsky's stipulation may only be assumed partially: there is no problem with the elimination of non-uniform A-A' chain; however, the assumption that the uniform A chain is formed by the Agree features of C poses problems for the phenomenon that Agree may apply without movement. A more crucial un-interpretable feature for inducing the A movement is EPP of the functional head T instead of Agree of C. There seems no problem in assuming that the A movement is induced by EPP features of T and A' movement is induced by EF of C. Referring back to (1), if the subject *John* crosses the lower copy of *who* by virtue of EPP features on T, the subject can cross the unpronounced copy of *who* without intervention effect. Two separate uniform A and A' chains may be obtained by this modified mechanism without any problem posed for Agree without movement (IM) assumption. To avoid violation of PIC, it may be assumed that the EPP features of T are derivative from C. It seems better to assume that the EF and EPP features of C induce two types of movement A' and A respectively.

The following discussion presents the comparative analysis of wh- derivations in Punjabi and English. The latter precedes the former.

The structure (3), schematically described in (4) and (5), is a simple mono-clause English structure which involves wh-movement.

(3) What did John break? (Swan & Walter, 2003, p. 111)

(4) C[T[John *v**[VP broke what]]]

(5) What$_i$ C[did [John $_j$ T[~~what~~$_i$ ~~John~~$_j$[break ~~what~~$_i$]

What in (3) is raised from the object position to Spec-C position in successive cyclic A' movement. The EF of *v** raises *what* to outer Spec-*v** position. As only the head of an A chain could block this movement, the object *what* moves over the lower copy of the EA subj *John*. The EF of C further raises *what* to Spec-C position. Hence, a

uniform A' chain is obtained without any intervention effect by the subject *John*. The Agree/EPP features of T raises the subject *John* to Spec-T position to form a uniform A-chain. Apart from these two operations, a very significant operation is the movement of the dummy auxiliary *do* from T to C. This head movement operation strengthens the argument of Chomsky (2008) that the features of T are derivative from C, so the latter is the phase head on these grounds. The structure (3) involves movement from the object position. What happens in a wh-clause which involves wh-movement from subject position can be seen in the analysis of (6) schematically described in (7) and (8).

(6) Who broke the window? (Swan & Walter, 2003, p. 111)

(7) C[T[Who *v**[broke the window]]]

(8) Who $_k$ C[who $_j$ T[who$_i$ *v**[broke the window]]]

Derivation (6) involves wh-movement from subject position. According to the traditional mechanism, prevalent before Chomsky (2008), the wh-element *who* should first move to Spec-T position and then to Spec-C position to yield a mixed A-A' chain. However, according to the framework stipulated in *On Phases*, the EF of C raises a copy of *who* from the edge of *v** - Spec-*v** position. What about the Agree feature of T which should raise the EA subject *who* to value the unvalued ϕ-features on T and structural case features on the EA. Copy theory allows that an unpronounced copy of *who* may raise to Spec-T position to satisfy the Agree/EPP features on T which are derived from C. In this mechanism, the two separate uniform A –A' chains are obtained: A' chain= (who$_k$, who $_i$) and A-chain= (who$_j$, who$_i$). As shown in (8) there are two relations: first between who$_k$ and who$_i$; and second between who$_j$ and who$_k$, but there is no relation between who$_k$ and who$_j$. It yields that the Spec-C position has a similar relation with both argument chains (who$_j$, who$_i$) and (who$_i$): operator-argument relation. Furthermore, analysis of (6) also yields that the EF and EPP/Agree features of C can function simultaneously.

The analysis of (3) and (6) yields that extraction of wh-element from A-position does not render a mixed A-A' chain, but a uniform A'- chain. What should be the mechanism of wh-extraction for A'-movement. This can be seen in the analysis of (9) under a similar mechanism, schematically described in (10).

(9) Where do you come from? (Swan & Walter, 2003, p. 111)

(10) Where C[do [you T[~~do~~ [~~where~~ you*v* [come from ~~where~~]]]

The derivation (9) exhibits A' wh-movement. An important question arises: should wh-element *where* move directly to Spec-C position or should it stay at an intermediate Spec-*v* position. As the derivation is unaccusative, having no *v** phase, the EF of C can raise the wh-element directly from the domain of its complement TP to Spec-C position. Being A' movement it does not pose any problem as no intervention effect is induced by some other non-argument (adjunct). There is no problem, however, if it is assumed that *where* first moves to Spec-*v* position and then the EF of C raises it to Spec-C position. The other usual movements manifested through (10) are the movement of EA *you* to Spec-T position and the movement of dummy auxiliary *do* to C position. The former is induced by the Agree/EPP features of T and the latter is by C's tense features.

An important aspect of *OPh* framework is the elimination of un-interpretable wh-features which could motivate wh-movement. Earlier, it was assumed that C had some un-interpretable wh-features which could raise some wh-element with interpretable wh-features to value the un-interpretable features by the Agree and IM. What is the rationale behind the elimination of such mechanism? The rational is that the empty wh-operators could be extracted/moved from their base position had there been the un-interpretable wh-features on some functional head like C that could search for a wh–element goal with interpretable wh-features. This fact can be illustrated by the analysis of (11) schematically described in (12). The ungrammaticality of (13) lies in the reason that the empty operators fail to move alone.

(11) Which film have you seen? (Radford, 2004, p. 179)

(12) Which film$_i$C[have $_k$[you$_j$ T ~~have~~$_k$[~~which film~~$_i$~~you~~$_j$ *v** [seen ~~which film~~$_i$]]]]

(13) *Which have you seen film?

In (11), the wh- phrase *which film* moves successive cyclically to Spec-C position in two steps: the EF of *v** raise the DP to the outer Spec-*v** position from where the EF of C raise it to Spec-C position. In this successive cyclic IM operation, the wh-element *which* pied-pipes the NP *film* to the last destination: Spec-C position. The IM of the wh-element alone results in an ungrammatical structure (13). In previous cases the raising of singular wh-elements was possible, but here the wh-element alone fails to move for IM. The solution to this problem may be found in two ways. One is presented in Abney's (1987) suggestions according to which in such derivations the wh-elements are not maximal projections but Specifier to DPs headed by null determiners. So, it may be assumed that the phrase *which film* is a DP headed by a null determiner. The noun *film* is complement and *which* is the specifier of the DP. Being Spec *which* fails to move. The inability of *which* to raise to Spec-*v** and Spec-C positions in successive steps has other significant consequences also. Particularly, it is problematic for the stipulation of un-interpretable wh-features on phase heads C and *v** which could raise the wh-elements to their respective Spec positions. This study assumes that it is in fact the NP *film* which moves to Spec position of the phase heads instead of the wh-element. The raising of NP pied-pipes the specifier wh-element in the IM operation. This stipulation strengthens the elimination of un-interpretable wh-features on the phase heads. However, a simple analysis urges that the wh-element *which* is the D head of the DP *which film*. In that case the whole DP can be raised to Spec-*v** instead of the head D alone. This DP is the complement of VP and a maximal projection itself, thus posing no problem for the stipulation that extraction from complement position is possible.

The analysis of grammatical derivation (11) and ungrammatical derivation (13) are not enough to maintain the radical assumption that instead of wh-specifier or the head D *which* the NP complement *film* or the whole DP complement *which film* is raised to respective phases to satisfy their EF. For reaching a satisfactory conclusion some comparable structures are analyzed in the following discussion.

(14) Who have they spoken to? (Radford, 2004, p. 179)

(15) Who C [have [they T ~~have~~ [~~who~~ ~~they~~ *v** [spoken to ~~who~~]]]]?

Derivation (14), schematically described in (15), is also an instance where the wh-element *who* moves to Spec-C in successive steps: from base position to Spec-*v** and from *v** to Spec- C. At its base position *who* is simultaneously the complement of the PP *to who* and itself a maximal projection. Its extraction clarifies that wh-complements of PPs can be raised if they are maximal projections themselves. The other two instances of IM: from EA to Spec-T position and T to C are the usual instances of IM operations motivated by derivative Agree features of T and tense features of C respectively. To explore the phenomenon further, relatively more complex structures are investigated in the subsequent discussion.

(16) Which picture of who have you chosen?

(17) *Who have you chosen which picture of?

(18) *Which have you chosen picture of who?

(19) Which picture have you chosen of who?

(20) You have chosen [which picture of who]? (Radford, 2004, p. 179)

Derivations (16) to (19) exhibit raising of wh-elements either alone or by pied-piping the necessary material with them from the base position of the bracketed wh-phrase *which picture of who?* in (20). (16) is different from (17), (18), and (19) in that it involves the raising of complete *wh-phrase*. The EF of *v** raise the *wh-phrase* to Spec-*v** position and then EF of C raise it to Spec-C position without any problem. What happens in (17), (18) and (19) needs inspection. The ungrammaticality of (17) and (18) show that the two wh-elements cannot be raised alone. In both cases the wh-elements *who* and *which* are raised respectively without pied-piping any material from the whole phrase. The ungrammaticality of (18) is similar to that of (13). *Which* is the specifier of the whole DP, so there is no possibility of its isolated raising. Why does the wh-element *who* fail to move to Spec-C position without fetching any material to its destination resulting in ungrammaticality of (17)? The reason of the inability of raising *who* in (17) is different from that of *which* in (18). If analyzed with respect to intervention effect, *which* is not blocked by any intervening element in (18) as it crosses the lower copy of the EA *you* to move to Spec-*v** position from where it is directly raised by the EF of C without any intervention effect induced. Hence, its inability to move is similar to (13). However, in

(18) the wh-element *who* fails to move to Spec-*v** position because the *in-situ* element *which* induces an intervention effect. It implies that if complement of VP possesses two wh-elements as in *which picture of who*, the EF of the nearest phase *v**P would not be able to raise the lower wh-element because of intervention effect. Otherwise, extraction from PP complements is possible as in (14).

The analysis, conducted so far, yields that in some cases the wh-element is allowed to be extracted alone while in other cases the whole phrase needs to be pied-piped with the raising of wh-element. This phenomenon can be accommodated by assuming Huang's (1982) observation that only complements allow extraction of material from them, not specifiers and adjuncts (Uriagereka (2000) and Sabel (2002) attempt to provide a minimalist account of such effects) . The analysis of the derivations from (21) to (30) provides evidence in support of Huang's observation.

(21) He was taking [pictures of who]? (Radford, 2004, p. 194)

(22) Who he was taking picture of ~~who?~~

The raising of *whom* results in grammatical expression (22) because the wh-element is extracted from the PP complement of the VP. *Who* is raised to Spec- *v** form where the EF of C raise it directly to Spec-C position. This mechanism of obtaining the derivation also strengthens the phenomenon of uniform A'-chains instead of mixed A-A' chains as stipulated by Chomsky (2008). The wh-element *who* has no place to move to Spec-T position which is already occupied by the subject *he*. No intervention effect is induced as the two operations of raising of *he* to Spec-T position and raising of *who* to Spec- C position are triggered by two different features: Agree/EPP and EF respectively.

(23) [Part of what] has broken? (Radford, 2004, p. 194)

(24) Part of what C [~~part of what~~ T[has [~~part of what~~*v**[broken ~~part of what~~]]]]

(25) *What [part of ~~what]~~ has broken?

The derivation (23), schematically described in (24), reveals very significant results. According to traditional approach, the subject *part of what* might be assumed to stay at Spec-T position before the final Spell-out. However, this study assumes a rather different position to strengthen an already observed phenomenon that it is not wh-element

which pied-pipes some material with it when raised by the EF of some phase head C or *v**, but the wh-features are pied-piped with the rest of the material raised by EF features of the respective heads. Originated at the complement position of the V *break*, the NP moves to Spec-*v**. This raising is caused by the EF of *v** as no case features are valued in this probe-goal relation. Form Spec-*v** position, according to Chomsky's (2008) stipulation about uniform A-A' bar chains, one unpronounced copy is raised to Spec-T position valuing the unvalued features of probe and Nom case features of goal. This operation is motivated by the derivative Agree/EPP features of T. Simultaneously, the EF of C raises the NP to Spec- C position. Both operations are applied parallel to each other without any intervention. The latter operation helps this study in strengthening an already mentioned assumption: in raising to Spec-C position the wh-material is carried along by pied-piping instead of vice versa.

The ungrammaticality of (25) strengthens Huang's (1982) proposal that wh-extraction is impossible from specifiers. There is no intervening element to block the raising of wh-element from respective Spec-heads. The only reason is that moving to Spec-*v** position, the whole NP *part of what* occupies Spec position, so Huang's observation holds to result in a non-convergent derivation if *what* alone is extracted to Spec- C position as exhibited in (25).

(26) He was angry [when she hid what]? (Radford, 2004, p. 194)

(27) *What was he angry [when she hid ~~what~~]?

The bracketed part in (26) is an adjunct. The extraction of wh-element *what* is impossible form complete wh-adjunct phrase. If *what* is extracted from the phrase the resulting expression (27) would be ungrammatical. The derivations (28) and (29) also reinforce Huang's proposal as the Adjunct wh-expression *How long* is extracted as a whole in the derivations. The extraction of the wh-expression *how* alone would yield ungrammatical structures.

(28) How long have you been here?

(29) How long does it take to learn English?

(30) How long does it take to get to London? (Swan & Walter, 2003 p. 109)

The derivations (31) and (33) derived from Chomsky (2008) provide strong evidence is support of the assumption that wh-extraction from Spec position is not possible.

(31) Of which car did they find the driver? (Chomsky 2008, p. 15)

(32)

Of which car $_i$ C [did [they$_j$ T [~~of which car$_i$~~ ~~they$_j$~~ *v**[find the driver ~~of which car$_i$~~]?

Derivation (31), schematically described in (32), exhibits wh-extraction from complement position of the object *the driver*. Instead of the whole DP complement of VP *the driver of which car*, the PP complement *of which car* is probed by the EF of *v** and raised to the outer Edge of the phase head *v**. This raising crosses a lower copy of the subj without any problem because only the head of a chain can induce an intervention effect. From outer edge of *v**, the PP complement is probed and raised by the EF of C. The Agree features of T raise the subject *they* to Spec-T position and the tense features of C raises the auxiliary *did* from T to C. Hence, both effects are obtained: that raising/ movement from complement position is possible and the features of T are derivative from C. The grammatical derivation (31) can be compared with ungrammatical derivation (33) to illustrate the phenomenon.

(33) *Of which car did the driver cause a scandal?

(34) Of which car C [did ~~of which car~~ [T ~~of which car~~ the driver ~~of which car~~*v** [cause a scandal]?

In derivation (33), the PP complement *of which car* is extracted from the subject DP *the driver of which car*. It is comparable to (31) where the wh-phrase was extracted from the PP complement of the object DP. In (33) subject DP is merged at the Spec-*v** position by EM. According to the mechanism schematically described in (34), (33) is obtained by first raising the PP complement from inner Spec-*v** to outer Spec-*v**. This raising by IM is completely impossible because the Spec-*v** is not in the domain of *v**, so it cannot probe a material in its Spec position and its further raising to Spec-C position by

EF and Spec-T position by Agree features is out of question. Hence, (33) yields an ungrammatical derivation.

Chaves (2012), however, presents evidence, from structures (i) to (vi), to counter the often-adopted assumption about impossibility of extraction from Adjuncts and specifiers.

i. What did John drive Mary crazy trying to fix?
ii. Who did you go to Girona in order to meet?
iii. Which email account would you be in trouble if someone broke into?
iv. What were pictures of seen around the globe?
v. Which president would the impeachment of cause more outrage?
vi. Which book will the author of never be known?

(Chaves, 2012, pp. 467-468)

Structure (i) to (iii) show evidence of extraction from Adjuncts while (iv) to (vi) are evidence of extraction from subjects. Interestingly, these structures pose challenge to the oft accepted proposal about inability of extraction from adjuncts and specifiers. As the grammatical derivations (i) to (vi) (where the wh-element is extracted either from adjuncts or Specifier (subject)) may be obtained, it seems difficult to stick to the impossibility of extraction from both adjuncts and specifiers. However, it is important to note from (i) to (vi) that wh-element has been extracted form complement position: either from VP complement or PP complement present inside specifier or adjunct. This commonality may lead to the extension of already assumed stipulation that extraction is possible from compliment position. In light of the evidence provided by Chaves, the possibility of extraction from compliments may be broadened to more elements: adjuncts and Specifiers. Simultaneously, the assumption about the impossibility of extraction needs to be revisited.

Shah (2015, p. 156) observes that Punjabi wh-expressions are mostly "placed before the main verb or verb phrase, except the questions about the subject itself". This is instanced in the structures (a) to (d) in (35).

(35)

a. Oh kithe gea ai/e?
he where go-perf.m.s is
(Where has he gone?)

b. Oh kadon ghar jaae ga?
he when home go-fut.m.s will-fut.m.s
(When will he go home?)

c. Eh ki e/ai?
this what is
(What is this?)

d. Time ki hoya ai/e?
time what be-perf.m.s is
(What is the time?) (Shah, 2015, pp. 156-157)

Despit this usual word order, Shah also observes that there exists, simultaneously, a tendency to place the question words at sentence initial position which are mentioned in structures (42) below.

The The Punjabi language counterparts of English *wh-questions/expressions* are labeled as *k-questions/expressions* by Bhatia (1993) owing to their beginning with alphabet k or /k/ equivalent sound. As a general phenomenon, Punjabi k-expressions, like usual syntactic derivations of the language, exhibit a relatively free word order. However, the interesting remark of Bhardwaj: "it does not mean that you can put anything anywhere" (Bhardawaj, 1995) induces that there should be a justification of any flexible word change. A surface look at the k-question data, selected for analysis in this study, allows to assume that Punjabi is a wh-movement language where k-elements move rather freely in a k-question derivation. This can be illustrated through structures (35) (a-e) selected from Bhatia (1993).

(36)

a. Kurii ne munde nuu kal apne khar kari deti.

b. **kis-ne** munde-nuu kal apne khar kari deti?
who-erg boy-acc yesterday own house watch.f.s give-perf.f.s
(Who gave a watch to the boy in one's own house?)

c. Kurii-ne munde-nuu kal apne khar **ki** deti?
girl-erg.f.s boy-acc.m.s yesterday her house what give-perf.f.s
(What did the girl give to the boy in her own house?)

d. Kurii-ne **kis-nuu** kal anpne khar kari deti?
girl-erg.f.s who-acc yesterday her/own home watch.f.s give-perf.f.s
(To whom did the girl give the watch in her house yesterday in her house?)

e. Kurii-ne munde-nuu **kad** apne khar kari deti?
girl-erg.f.s boy-acc.m.s when her home watch.f.s give-perf.f.s
(When did the girl give the watch to the boy in her house?)

f. Kurii-ne munde-nuu kal **kithey** kari deti?
girl-erg.f.s boy-acc.m.s yesterday where watch.f.s give-Perf.f.s
(Where did the girl give a watch to the boy yesterday?)

Bhatia (1993, pp. 12-13)

The bold k-expressions in structures (b) to (f), derived from (a), in (36) demonstrate no apparent word order change in case of incorporation of k-constituents in place of the usual sentence constituents: subject, direct object, indirect object, adjunct for time, and adjunct for place respectively.

The canonical word order of (36), subject- Indirect object –direct object –verb-tense marker (with adjuncts placed freely) does not confirm that the k-questions always

observe this strict order. The data of Punjabi k-questions reveal, on very first sight, that these structures exhibit a similar flexibility in word order. However, Bhardawaj's comment induce that there should be some syntactic rationalization of this freedom. Like other neighboring South Asian languages, Punjabi's flexible word order may be attributed to the phenomenon of scrambling which allows word order variation in argument phrases with particular reference to Adverbial phrases (Luraghi & Parodi, 2008, p. 166). The following analysis of Punjabi k-questions incorporates Kidwai's (2000) assumption that scrambling is XP-Adjunction, and Chomsky's (2001b) proposal that adjuncts do not alter the syntactic status of the elements they are adjoined to and behave as if they were not there. Apart from semantic interpretation, adjuncts are syntactically inert elements as they do not satisfy any selectional requirements of the heads. Therefore, in post-MI framework of Chomsky it is largely assumed that they are merged as pair merge causing no syntactic effect to the heads they are adjoined to. Benefiting from the renderings of Kidwai (2000) and Chomsky (2001b), the following analysis of Punjabi k-expressions is conducted under Chomsky's (2008) *Oph* framework.

(37) Tusi ki kam karde ho?
you.2nd.m.s what work do is
(What do you do?)

(38) CP[TP T<u>usi</u> -[*v**P ~~Tusi~~ *v**- [VP $_{NP}$ ki kam$_{V}$ karde]-*v**]-ho$_{T}$]]

In derivation (37), schematically described in (38), the verb *karde* merges with the already formed DP *ki kam* to form the VP *ki kam karde*. This VP merges with *v** to form *v**P which merges the EA *Tusi* at the Spec-*v** position. The *v**P merges with tense auxiliary *ho* to form TP which merges with C to complete the interrogative clause: *Tusi ki kam karde ho?* The usual movement operation is the IM of the EA *tusi* from Spec-*v** to Spec-T position. This structure does not involve any sort of adjunction so there is no need to invoke scrambling phenomenon, but a significant question arises about k-expression which gives the interrogative status to the derivation. The question is whether the DP *ki kam* remains *in-situ* or raises to Spec-*v** position which is a potential landing site for A' wh-movement. It is evident that the k-expression of the derivation does not raise as far as Spec-C position like English wh-elements; however, in some recent studies Manetta

(2009) and Bayer and Cheng (2015) propose that in South Asian languages like Urdu-Hindi the apparently *wh-in-situ* elements raise to Spec-*v** position which is a landing site for wh-elements in wh-movement languages. For derivation (37), it is possible to assume both the ways as no problem arises if k-element is expected to move to Spec-*v** position. However, the question is left open to be decided after the analysis of some more complicated structures.

If the derivations in (36) are analyzed in light of Manetta's (2009) proposal, k-elements in all structures except (b), where k-element subject may raise to Spec-C position, may be assumed to move to Spec-*v** position from where they don't move any further. This generalization again cannot be applied to all k-elements of Punjabi as the structures (36) don't contain any instance of scrambling of any element within VP. In case all the elements remain in-*situ* in a canonical word order (e.g., in (36) no problem arises in assuming that k-expression raises to Spec-*v**). What about the structures where adjuncts are not so gentle to occupy an unproblematic place like (36)? Such structures may be analyzed after a few structures where k-expressions precede the main verb. In fact, such structures are motivation for holding Manetta's proposal.

(39) Tusi **ki** chahande ho?
You.2nd.pl what want is
(What do you like?) (Bhardawaj, 1995, p. 49)

(40) Tuan-nu **ki** chahida he?
you-dat.2nd.pl what desirable is
(What is desirable to you?) (Bhardawaj, 1995, p. 49)

(41) Computer **kithe** chahida ai/e?
computer.m.s where required.m.s is
(Where is computer required?) (Bhardawaj, 1995, p. 56)

In derivations (39) to (41) the k-elements immediately precede the main verb of the clause. This is a prevalent tendency in Punjabi k-questions which leads to assume that focus position is Spec-*v** position and the k-expressions raise to this position instead of remaining *in-situ*. Like derivations in (36), there is no problem in assuming that the k-expressions are raised to Spec-*v** position in (39) to (41). Derivation (39) is a transitive

structure where the questioned element is a DO placed in usual word order. No intervention effect is induced if k-expression moves to Spec-*v** position. In derivation (40) the dative subject *tuan-nuu*, which takes *–nuu* as a dative post position, moves to Spec-T/C position again leaving no intervention effect for the questioned DO to move out of *v**P to Spec-*v** position. In (41) the derived subj is raised to Spec-T position by Agree features and the adjunct *kithey*, pair merged with the verb, may be assumed to raise to Spec-*v* position.

Derivations in (35) confirm the pattern maintained in (39) to (41) (i.e. the k-expression usually precedes the verb); however, Shah (2015) observes that k-elements may also take sentence initial position if required for the purpose of emphasis.

(42)

a. Ki time hoya ai/e?
   what time be-perf.m.s is
   (What time is it?)

b. Kaun (a)ein toon?
   who are you
   (Who are you?)

c. Kithon aya (a)ein?
   where come-perf.m.s are
   (Where have you come from?) (Shah, 2015, p. 157)

The structures in (42) confirm that the k-expressions may take sentence initial position instead of more common verb initial position.

In Punjabi k-question data, some derivations are identified which pose problems for Manetta's proposal regarding raising of k-elements to Spec-*v** position. Derivation (43), schematically described in (44), fails the raising of k-expression to Spec-*v** position.

(43) Tuu e kaani kive likhii?
   you this story how write.f.s
   (How did you write this story?)

(44) CP [TP-Tuu$_i$ [*v**P ~~Tuu~~$_i$-[VP e kaani<kive, likhi>]-*v**]-T]?

(Bhatia, 1993, p. 10)

Schematic description (44) shows that (43) is obtained by the following computational procedure. The verb *likhii* merges with the DP *e kaani* to form the VP which is adjoined to the adjunct *kive* by pair merge operation as shown by <> pair. According to Chomsky's (2001b) stipulation about adjunction, this pair merge operation renders the VP syntactically unaffected. The VP merges with *v** to form *v**P. The EA *tuu* is merged at Spec-*v** position. The *v**P merges with T and C successively to complete the CP projection. The Agree features of T derivative from C raise the EA *tuu* to Spec-T position to value the unvalued features. The important thing to notice in the computation of (42) is that the adjunct k-expression *kive* is placed between the head V and its complement DP. There is no possibility of such derivation in the usual syntactic mechanism, so such adjustment can only be accommodated under scrambling. Moreover, it is necessary to adopt Kidwai's (2000) proposal that scrambling is XP-adjunction. The adjunct *kive* is scrambled between the head V and complement DP. The further significance of this mechanism of computation is that the scrambled k-expression can't raise to Spec-*v** position. If it moved to Spec-*v** position, it should have preceded the direct object DP *e kannii*. It implies that the adjunct k-expression stuck between the V head and DP/NP complement to pose problems for Manetta's proposal.

(45) Tuu othe kio gya?
you there why go
(Why did you go there?)

(46) CP [TP Tuu [*v*P~~Tuu~~ [$_{VP}$<othe><kio>gya$_V$]-*v*]-T]?

Structure (45), schematically described in (46), is an unergative construction. The k-expression *kio* does not move out of VP because of the intervention effect caused by the other Adjunct *othe*. The occurrence of the adjunct immediately before the verb and stranding there by not crossing over the other Adjunct to come out of VP to Spec-v position implies that there are cases where Adjuncts remain *in-situ*. In both derivations (43) and (45), the Adjuncts remain in-situ within VP where they are adjoined to main verb by XP-Adjunction. This may be generalized as a phenomenon that XP-

adjoined/scrambled k-elements remain in-situ in The Punjabi language. This may be a spot light for studying adjunct wh-elements across the neighboring South Asian languages (e.g Urdu-Hindi, Bangla, Marhati etc.) It is particularly relevant for modification of Manetta's proposal of raising to Spec- *v** position.

In order to resolve the issue whether Punjabi k-expressions remain in-situ or raise to Spec-*v**/*v* position, the following discussion analyze some more complex derivations to reach a satisfactory conclusion. Derivation (47) is a very interesting instance of a multiple k-question. All the arguments and adjuncts are replaced into k-expressions. It is rather interesting to note that no superiority effect may be induced to obtain this derivation.

(47)	Kaun	kad	kide	nal	ki	vekhan	gia?
	who	when	whom	with	what	to see-inf	go-perf.m.s

(Who did go to see what with whom and (when)? (Bhatia, 1993, p. 25)

The multiple k-question derivation (47) illustrates the flexibility of the Punjabi language in providing room for as many k-expressions as possible. This fact is rendered clear if Punjabi k-derivation is compared to its English counterpart as shown in brackets. The direct English translation appears impossible; therefore, the last wh-counterpart *when* has to be added with the help of co-ordination. The analysis of this derivation has significant consequences for deciding the ongoing conflict between movement/raising or *in-situ* facts about Punjabi k-expressions. The derivation contains control predicate TP where the non-finite T is a null constituent which heads the predicate verb *vekhan* (to see) and the remaining complement. The derivation is obtained by the merge of the verb *vekhan* with the NP which is already formed by the merge of the object *ki* with PP *kide nal (with whom)* which is merged with the adjunct *kad (when)* by pair merge. The VP thus formed is merged with a null T to form a non finite TP. As the TP is non-finite and the derivation is a control structure, it is assumed that there is a PRO subj merged at the Spec-TP. This TP is merged with the intransitive verb *gia* to form VP which merges with the little *v* to form *v*P. The EA *kaun* is merged at the Spec-*v* position. The *v*P is merged with the finite T to form TP which is merged with C to form CP. The Agree features of T derivative from C raise the EA *kaun* to Spec-T position. It is clear about the three k-

expressions: *ki*, *kide naal* and *kad* that they remain in-situ. The concept of multiple specifiers may allow the extraction or raising of the three k-expressions to Spec-*v* position, but the problem arises when it becomes obligatory to assume that they raise to the outer Spec-*v* position separately, independent of each other, one after the other. Suppose the EF of *v* attract the nearest c-commanding k-element raising it to Spec-*v* position. Now the EF of *v* would not be able to attract the remaining k-elements because of the intervention effect caused by the earliest moved k-element. This inability of k-expressions to raise to Spec-*v/v** position in multiple k-questions poses further problems for Manetta's (2009) proposals, and it seems difficult to assume that k-expressions always raise obligatorily to Spec-*v** position by IM operation.

(48)	Koun	kal	Soun (noun)	de-naal	kii	karan	giaa?
	who	yesterday	Soun	with	what	(to)do-inf	go-perf.m.s
	(Who went to do what with Soun yesterday?)						(Bhatia, 1993, p. 25)

Analysis of (48) strengthens the conclusion drawn from (47). The k-question in (48) consists of two k-expressions: *ki* and *koun* which are merged during two different phases of derivation *v** and C respectively. Derivation (48) falls under control phenomenon like (47), but the former clarifies the k-*in-situ* facts in more clear way. The derivation (48) is obtained by the following derivational procedure. The k-expression *kii* merges with PP complement *Soun de naal* (with Soun) to form NP which merges with the verb *karan* to form VP which merges with null non-finite T constituent to form TP which merges with PRO to fulfill the EPP requirement of non-finite T. The non-finite TP merges with the main verb *giaa* to form VP which merges with *v* to form *v*P. As the verb *giaa* is an unergative intransitive verb, it obligatorily requires an EA. So, the EA *koun* is merged at Spec-*v* position. This *v*P is merged with finite T to form TP which merges with C to form complete CP. The adverb of time *kal* is adjoined to the PP *Soun de naal* by pair merge operation without obtaining any syntactic effect and leaving the syntactic object, to which it is adjoined, syntactically unaltered. Now the questions arises whether the k-expression *kii* is raised to Spec-*v** position before the final spell-out of its relevant phase. It is very easy to observe that it remains *in-situ* because it should have preceded its PP complement and the adjunct in the word order if it had moved to Spec-*v* position. Its

stranding in its base position is another evidence of k-expression's remaining *in-situ* in The Punjabi language. There are now ample evidence to assume that Punjabi k-expressions do not obligatorily move /raise to Spec-*v/v** position. They may move to this potential site, but there is also evidence of their remaining *in-situ*.

Along with multiple k-questions, a very interesting set of data has been identified which may be helpful in deciding the matter between k-raising and k-*in-situ* facts with significant conceptual consequences. Unlike English, Punjabi allows reduplication of k-expressions. Structure (49) and (50) exhibit reduplication of k-expression in Punjabi language.

(49)	Otthe	ki	ki	gallan	hoian?
	there	what	what	talk/discussion-f.pl	happen-pst.f.pl
	(What kinds of topics were discussed there?)				(Bhatia, 1993, p. 11)
(50)	Otthe	keri	keri	thaan	vekhi?
	there	which	which	place-f.s	see-pst.f.s
	(Which places did you see there?)				(Bhatia, 1993, p. 12)

Derivation (49) is a passive k-derivation where the question of raising to Spec-*v/v** position does not arise but the mechanism of derivation of the whole structure reveals a fact of grave consequence which can be generalized to derivation (50) and other structures that show reduplication. The derivation (49) is thus formed by the following derivational mechanism. The k-expressions *ki* are merged at the Specifier positions of the QP to form *ki ki gallan*. The QP is merged with the un-accusative verb *hoian* to form VP which is merged with T to form TP which is merged with C to form CP. The Agree feature of T, derived from C, attract the whole QP to Spec-T position where nominative case is assigned to the NP. It is important to note that the phrase *ki ki gallan* cannot be broken into parts to extract or raise some part of it to a higher Spec-T position. If one k-expression *ki* is raised separately from the other, it would induce intervention effect and block the raising of the other k-expression to the further outer Spec-T position. In this way the possibility of multiple specifier would not allow the specifier k-expressions to raise separately because of intervention effect caused by the first raising of k-expressions.

Derivation in (50) appears structurally equivalent to (49); however, the former is transitive while the latter is un-accusative. Therefore, (50) consists of a *v** phase and it might be assumed that the DP/QP *keri keri thaan* might raise to Spec-*v** position as whole because the wh-expressions *keri keri* alone cannot be extracted independently owing to two reasons: first, the extraction from Spec-position is impossible (a fact discussed in detail during the analysis of English data); secondly, if the two quantifiers *keri* and *keri* raise separately, the first raising element would induce intervention effect for the latter. So, construction (50) provides an option of raising of the whole QP to Spec-*v** position. However, the following data which exhibits both reduplication and multiple k-expression phenomena pose problem for the assumption of raising of k-expression to Spec-*v** position (*who who when when where where who who to meet where*).

(51)	Kaun	kaun	kad	kad	kithe	kithe	kinu	kinu milan	janda	e/ai?
	who	who	when	when	where	where	who	who meet-inf	go-hab.m.s	is
	(Who goes to see who when and where?)								(Bhatia, 1993, p. 26)	

Derivation in (51) provides a lot of evidence to assume that k-expressions remain *in-situ* in Punjabi. In the control derivation, there are eight k-expressions. The derivation is formed by the following derivational procedure. The reduplicated k-expression DP *kinu kinu* (Because of reduplication facts three identical k-expressions *kaun kaun kaun* is not possible) is merged with the verb *milal* to form VP *kinu kinu milan* which is merged with the null non-finite T constituent to form TP. This TP merges with PRO to fulfill the EPP requirement of non-finite T (The adverbs *kithe kithe* and *kad kad* are merged with the non-finite TP by recursive pair merge operation). The non-finite TP merges with the main verb *janda* to form VP of main clause which merges with *v* to from *v*P which merges with the finite T to form TP which merges with C to from CP. The EA of the main clause, the DP *koun koun*, is merged at the Spec-*v* position initially. The Agree features of T attract the reduplicated DP *kaun kaun* to Spec-T position as a whole to avoid intervention effect. Within the non-finite T there appears no evidence of extraction/raising of some k-element form the long complement of the verb *milan*: *kad kad kithe kithe kinu kinu*. If one element raises, it would at least move its adjoining

reduplicated element with it which appears impossibe in the case of such a long context of reduplication.

A question remains to be answered whether the subject k-expressions raise to Spec-C position as they do in wh-movement languages like English or they remain *in-situ* at Spec-T position where they are raised for valuing Agree and structural case features on both heads. There are clues in data which lead to assume that they remain *in-situ*. The flexible word order of Punjabi induces this fact. The occurrence of different constituents of a sentence (e.g. object, adjuncts etc.) immediately before the subject of a sentence puts doubt on the raising of the subject to Spec-C position.

Apart from possibility of raising to Spec position of the respective edges of the phase heads C and *v**, this study finds ample evidence to assume counter to Manetta's (2009) proposal: k-expressions raise to Spec-*v** position. The k-questions containing multiple or reduplicated k-expressions particularly render it hard to believe any raising of long chain of k-expressions. The analysis of the data on Punjabi finds it even hard to assume the absolutely other way that k-expressions always remain in-*situ*, never moving to Spec-*v*/*v** or C position. The Punjabi data exhibits that in declarative derivations the syntactic objects move rather freely as compared to languages like English where wh-expressions move differently from their declarative counterparts. The data from (52) to (56) illustrate that the movement of k-expressions in Punjabi is not due to some particular wh/k-features as it is supposed by Manetta in line with Chomsky (2000, 2001), rather the free movement of k-expression is just analogous to usual free movement of syntactic elements in non-question structures. The derivations in (52) show that Punjabi allows free movement of words in both declarative and interrogative structures.

(52)

a. Gurbacan kar gia.
   Gurbacan home go-pst.m.s
   (Gurbacahn went home.)

b. Kar gurbacan gia.
   home Gurbacan go-pst.m.s
   (It was home where Gurbacan went)

c. Kithe gurbacan gia.
where Gurbaca go-pst.m.s
(It was where that Gurbacan went to?)

d. Gurbacan gia kithe.
Gurbacan go-pst.m.s where
(It was where that Gurbacan went to?) (Bhatia, 1993, p. 27)

In (52), (a) and (b) are declarative structures while (c) and (d) are k-questions. It is quite evident that freedom of movement is allowed in both declarative and interrogative structures. This is a very strong evidence to eliminate the early assumption of Chomsky (2000, 2001a), also adopted by Manetta (2009), that the C and *v*/v* heads possess the un-interpretable wh-features which are deleted by the moving/raising of wh/k elements to their respective Spec-positions. Punjabi k-expressions do not obligatorily move to Spec positions of the edges of *v** and C, rather they move as usual constituents move/raise in declarative derivations for reasons other than un-interpretable wh-features. Bhatia (1993) proposes that free movement in Punjabi syntactic derivations is due to scope and focus phenomenon. Although he does not provide a minimalist account of his proposal, yet his proposal can be incorporated in current minimalist framework to accommodate relatively free movement of The Punjabi language. To illustrate his proposal Bhatia provides evidence from free movement of k-expression in (53) to (56) below.

(53) Tussi o-nuu kataab kio ditti?
you he-dat book-f.s why give-pst.f.s
(Why did you give him a book?)

(54) Tussi o -nuu kio kataab ditti?
you he-dat why book-f.s give-pst.f.s
(Why did you give him a <u>book</u>?)

(55) Tusi kio o -nuu kataab ditti?
you why he-dat book-f.s give-pst.f.s
(Why did you give <u>him</u> a book?)

(56) Kio tusi o -nuu kataab ditti?
why you he-dat book-f.s give-pst.f.s
(Why did you give him a book?) (Bhatia, 1993, p. 28)

The derivation (53) exhibits a canonical word order where the k-expression precedes the verb *ditti* immediately. In derivations (54), (55), and (56), the k-expressions move to take the DO *kataab*, indirect object *O (he)* and the subject *tusi* into its scope. The free movement of k-expressions in these derivations reinforces the argument maintained in this section that there are certain situations where the movement may not be driven by syntax internal factors; hence, such movement may not always be targeted to particular (e.g. Spec-*v** or Spec-C) syntactic positions according to Kidwai's (2000) proposal. The wide range of flexibility in word order obtained in Punjabi k-question derivations also make it difficult to assume in line with Manetta (2009) and Bayer and Cheng (2015) that k-expressions move to Spec-*v/v**, rather the k-expressions may assume different positions independent of Spec-*v** or Spec-C. Such flexibility renders it easy to assume that the motivation of movement may lie at C-I interface, determined by discourse/pragmatic/semantic factors, and that such flexible movement is very hard to accommodate under the usual Internal Merge movement; hence, the proposal of an Internal Pair Merge operation may be a satisfactory solution to accommodate such movement which is independent of the features of the phase heads (i.e. *v** and C).

CHAPTER 5
FINDINGS, DISCUSSION AND CONCLUSION

This chapter presents the findings rendered by analysis of the data in five different sections of chapter 4. The analysis is based on Strong Minimalist Thesis (SMT): Language is an optimal solution to the legibility (interface) conditions (Chomsky, 2008). In the framework of SMT, the computational/derivational procedure of language C_{HL} takes two Syntactic Objects (SOs), which may be Lexical Items (LIs) or already formed SOs, and form new SOs from them by a binary operation Merge. There are some features of LIs which enter into derivation unvalued because they are un-interpretable at C-I interface. As an optimal solution or a perfect design, language provides mechanism of Agree, a secondary operation, which is induced to value the un-interpretable features of the LIs.

The analysis of data in chapter 4 helps this study in reaching the following facts to address the research questions. In the following discussion each research question is addressed separately.

a) How does the computational procedure of language C_{HL} derive the CPs in the two languages, Punjabi and English, by the primary operation Merge and the feature valuation mechanism Agree?

The analysis of intransitive (unaccusative and unergative), passive, and transitive derivations of Punjabi and English yield that the respective CPs are derived by an approximately similar mechanism based on Merge and Agree in the usual derivations where the subjects are in nominative structural case. However, the Punjabi derivations where subjects are assigned ergative case are obtained by a different feature valuation mechanism. In unaccusative/passive derivations, English has no little *v* to value the structural case of the sole NP (i.e., the IA) which is merged as complement of the VP. So, this NP receives nominative case value from T. The Punjabi unaccusative/passive

derivations select the little *v,* from the lexicon, which cannot assign accusative case value to an NP. The passive/unaccusative derivations of both languages differ in possessing a little *v,* but share the property that accusative case is not possible in such derivations of both languages whether they possess a *v* or not. The unaccusative/passive derivations are thus obtained by a similar computational procedure: the V merges with the obj IA to form VP which merges directly with T and then with C to complete the unaccusative CP in English, but in Punjabi the VP merges with a weak *v* to form a *v*P which is not a phase level owing to the incomplete set of ϕ-features on the *v* labeled as v_{def}. The NP merged as obj IA receives no case value from v_{def}. Hence, in both languages the IA of unaccusative/passive derivations are raised to Spec-T position to satisfy the EPP features of T. In Agree between T probe and obj IA goal, the un-interpretable ϕ-features of the probe and structural case features (i.e., nominative) of the goal are valued. In unaccusative and passive derivations, the subject in both languages usually receives nominative case value as no evidence of ergative is identified on the subject of such derivations. The only difference is the presence of a little *v* (i.e., v_{def}) in Punjabi unaccusative/passive derivations which is syntactically ignorable because of inability of this *v* to value the structural case features.

Different mechanisms, however, are required for obtaining the unergative and transitive CPs in the two languages as in Punjabi language there remains possibility of ergative case on third person subjects of perfective clauses in such derivations. In English unergative derivations, the *v* merges with the complement V to obtain *v*P which merges the sole argument NP (i.e., EA) at Spec-*v* position. The *v*P mergres with T and C for completing a CP. This *v* can't value structural case features of the subject EA which has to become the goal of the probe T under Agree operation for valuation of un-interpretable ϕ-feature of the probe and structural case features of the goal. The valuation of un-interpretable features of *v* in English unergatives is non-obligatory because it is v_{def} for possessing incomplete set of ϕ-features. The Punjabi unergative CPs are obtained by different mechanisms which depend upon selection of a particular *v* from the lexicon. The lexicon contains a set of *v* elements which allow ergative marking on subjects while it also contains a set of *v* elements which don't allow ergative case. Although, the ergative case on subjects in Punjabi is licensed by two major factors (i.e, aspect and person) yet

both these factors may lose ergativity depending on the choice of a particular *v* from the lexicon. In this complex situation, the unergative derivations in Punjabi are obtiained by two possible mechanisms. In the first mechanism, the *v* merges with the complement V to form *v*P, the subject NP merges as EA at Spec-*v* position to complete the *v*P which merges with the T and C to form TP and CP respectively. There are some un-interpretable features which must be valued for convergence of the derivation at the interface levels. These features include the ϕ-features on T and structural case features on the subject. In the first mechanism, the probe T enters into Agree operation with the goal NP to value the un-interpretable features on both sides. Hence, the subject receives nominative case value from the T probe. In the second mechanism, the C_{HL} selects the *v* from lexicon which allows ergative on the subject. In such unergative derivations of Punjabi language, the *v* is merged with the complement V to form *v*P. The subject NP is merged as EA at Spec-*v* position. To fullfil its inherent requirement, the *v* assigns ergative case to the subject NP at the θ-position. The *v*P is merged to T and C to obtain TP and CP respectively. The T has to get default Agree features because of inavailability of any goal NP/DP for feature valuation. The Punjabi data has shown the evidence of default agreement. The study of unergative Punjabi derivations with ergative subjects helps in deciding many problematic issues with respect to the source of ergativity in Punjabi.

b) What is the source of ergative case in Punjabi?

The study of unergative and transitive Punjabi derivations yields that the source of ergative case is *v*/*v** which assigns ergative case, as its inherent requirement, to the subject NP merged as EA at Spec-v/*v** position. There is evidence that ergative case is liscened amidst a cluster of factors (i.e., aspect and person); however, ultimately this quirky case depends upon the choice of *v*/*v** from the lexicon. Thre are certain *v*/*v** elements which do not allow ergative on third person subjects of perfective clauses which normally require ergative case (i.e., in case derivation contains some *v*/*v** element that allows ergative case inherently). Hence, the data provides ample evidence for assuming that ergative is inherent case assigned by *v*/*v** to the subject NP at θ-position (i.e., Spec-

v/*v**). This finding can be discussed in light of three major approaches to ergative case as explored in previous literature.

First, this study finds adequate evidence to reject the approach that ergative is a structural case sourced from TP/CP domain as maintained in Levin and Massam (1985), Bobaljik (1993a), Chomsky (1993), Bittner and Hale (1996a), and Bobaljik and Branigan (2006). If this claim holds true, it becomes very difficult to stipulate a mechanism for differentiating between nominative and ergative case. If nominative and ergative are both structural cases sourced from higher CP/TP domain then how the two cases can be differentiated and why is there a need for two different labels. The structural case approach for ergative cannot answer these questions sastifactorily.

The second approach, for which the data has provided unexpected results in this study, is dependent case approach adopted by Marantz (1991), Baker (2014a, 2015), Baker and Bobaljik (2017). This approach is based on the assumption that ergative is a dependent case as it depends upon the presence of two NPs in a case marking domain. In the two NPs, the higher NP is assigned ergative case. This approach oversimplifies a complex phenomenon by identifying the source of ergative in the relative position of an NP in a clausal domain. The evidence of ergative on subject of unergative derivations in Punjabi rejects the proposal of dependent case approach for Punjabi language. There is one NP (i.e., the subject that may receive ergative marking) present in the unergative derivations which implies that ergative case does not depend upon some lower NP in the clause.

Regarding the source of ergative case, the basic fact found by this study is in line with a wide range of works: Nash (1996, 2017), Woolford (1997, 2006, and 2017), Anand and Nevins (2006), Laka (2006, 2017), Legate (2006, 2008, 2012a, 2017), Mahajan (2012), and Sheehan (2017) among others. According to this study these works are right in their basic assumption that ergative is an inherent case assigned to subject by *v*/*v** at the θ-position (i.e., Spec-v/*v**). However, this study identifies some problems in the details provided by inherent case theorist and attempts to address them in light of empirical and conceptual evidence found from the data. A major problem with inherent case theorists is that they rely on a GB type approach which causes some problems for

achieving SMT. For instance; the leading proposals of inherent case approach come from Legate (2008) who very problematically views that the ϕ-features of T enter into derivation as interpretable features. Her recent proposals in Legate (2017) do not address this problem. This study proposes that problem of valuatuion of un-interpretable features on T can't be resolved by assuming in line with Legate (2008); instead it should be assumed that in some languages the valuation of un-interpretable features of the functional head T may be non-obligatory and this functional head may assume default Agree features as proposed by Anand and Nevins (2006). Another problem identified in inherent case approaches is the failure to stipulate a satisfactory mechanism for differentiating inherent and structural cases. This leads to some conceptual problems found in the works like Ura (2006) where it is assumed that the assignment of ergative case values the un-interpretable features of v/*v**. A very significant contribution of this study is the rejection of this idea by assuming that the assignment of ergative case does not value the un-interpretable features of *v*/*v** and it may enter into Agree operation with a goal NP. This is clearly elaborated in the answer to the next research question.

c) How are the ergative and nominative case alignment patterns obtained in the two languages?

The rigorous study of ergative and nominative/accusative case alignment patterns leads this study to conclude that structural and inherent cases are assigned under completely different mechanisms. The explicit differentiation of these mechanisms is crucial for solving some bigger problems faced by the earlier studies on the two case patters. The structural cases (i.e., nominative or accusative), either in nominative language English or in split ergative language Punjabi, are assigned under Agree operation where a functional head probe, T or *v**, Agrees with a nominal goal. Both probe and goal must possess un-interpretable matching features to induce Agree which values the un-interpretable/unvalued ϕ-features of the functional head probes T or *v** and structural case features of the nominal goal which receive nominative value if probe is T and accusative value if probe is *v**. Another condition for obtaining this mechanism is that the goal must be in the domain of probe. On the other hand, inherent ergative case is assigned under a mechanism similar to θ-role assignment. The ergative in Punjabi is

assigned to the subject NP by the functional head *v** at the θ-position which is not in the Agree domain of the *v**. This study finds that the inherent case assignment cannot induce Agree operation on the basis of the conceptual evidence that the goal NP is not in the Agree domain of the probe *v*/*v**. Hence, it is assumed that the assignment of ergative does not value the un-interpretable features of the probe *v**. So, any ergative case assigning head remains active to be a probe for further Agree operation. In light of this finding, this study criticizes some recent works on ergative case (e.g., Legate (2008, 2017), Woolford (2006, 2017), and Mahajan (2017)) for not addressing this problem thereby causing a big conceptual gap. Some major problems in these studies are mentioned and addressed in the discussion of the research question (d).

d) What is the case of Direct Object (DO) in the derivations where subject receives ergative case?

Regarding an ongoing dispute about the case on DO in split ergative languages like Punjabi, this study concludes that the DO receives structural case from *v** under Agree operation. This finding is based on the evidence that post position *-nuu* marking on DO is different from *-nuu* marking on indirect objects or dative subjects. For instance, multiple indirect objects can take *-nuu* marking in one derivation while the occurrence of *–nuu* marking on indirect objects block the homophonous *-nuu* marking on DO. Furthermore, in derived structures, the DO may lose *-nuu* marking while the indirect objects and subjects do not. Such evidence helps in reaching the conclusion that *-nuu* marking of DOs is because of structural accusative case while the homophonous *-nuu* on indirect objects or subjects is because of dative case.

The findings of this study about the case of DO are unexpected for both Legate (2008) and Mahajan (2017). These recent studies have contradictory conclusions regarding the case of DO in ergative subject derivations. Legate (2008) claims that the *-nuu* marking on DO is due to inherent dative case on the NP while the usual non *-nuu* marked DOs receive accusative case value from *v**. According to this study, her claim is partially true. The DO receives accusative case from *v**, but there is evidence to reject her claim about *-nuu* marked DOs. The facts derived from *-nuu* marking on multiple indirect objects, the possibility of their reduplication and their difference from *-nuu* marking on

DO as evident in the case of derived subjects lead this study to conclude that the *-nuu* marking on DO is due to accusative case instead of dative case.

Mahajan (2017) proposed that DO receives nominative case from T by a long-distance relation instead of accusative case from the nearby functional head *v*/*v**. This study finds two major problems in his framework. One is that he adopts a traditional GB style approach which might take him to misleading results based on insufficient evidence. Secondly, he does not address how the features of *v** are valued if DO receives structural case value from T. The crucial proposal of this study that ergative case assignment does not value the un-interpretable features of the inherent case assigning head poses problems for Mahajan's stipulation. It provides no mechanism of valuation of the un-interpretable features of *v** if DO receives case value from a far-off head T. This study proposes that if default case options are available for the two functional heads T and *v**, it is more likely that the DO goal enters into Agree relation with the nearby head instead of the distant one. Hence, it is assumed that DO enters into Agree operation with *v*/*v** and T assumes default Agree features.

e) What is the parametric difference in the features of the Core Functional Categories (CFC's) C, T, and *v/v** of the two languages Punjabi and English?

The study of the CFC's in the two languages renders that English unaccusative and passive derivations lack a light *v* but the equivalent Punjabi derivations possess overt light v_{def} which cannot assign ergative case. The unergative derivations of both languages possess little *v* elements which in English cannot assign ergative but in Punjabi there is a set of light verbs which assign may ergative case. A parametric difference between T and *v** elements of the two languages is that in English there is no evidence of default Agree features on T except in rare cases where subject is in inherent dative case but in Punjabi there are widespread cases where T and *v/v** have to assume default Agree features (e.g., in the case of ergative subjects, the T of Punjabi transitive and intransitive derivations assume default case).

Another parametric difference is identified in the Edge Features (EF) of the phase heads C and *v** of the two languages. In English, the EF may force the raising of wh-

elements to the Edge of the heads in successive cyclic steps inducing A' movement which may occur simultaneously with the A-movement. These parametric features of C and *v** render English as wh-movement language. On the other hand, the C and *v** of Punjabi do not obligatorily raise the k-expressions to their Edges for satisfaction of the EFs. The study of Punjabi k-expressions yields that the k-expressions in Punjabi are not moved to Spec-*v*/*v** or Spec-C position for the satisfaction of some sort of *wh*- or Edge features; rather they move freely just like their non-k-expression counterparts for reasons which may or may not reside in the NS derivation. The wh/k-movement phenomenon is discussed in detail in the discussion of research question (h).

f) How can the dissociation of adjuncts from their original Merge position be accommodated in the C_{HL} of two languages?
g) Why do Punjabi exhibit free word unlike English which has a relatively strict word order?

The renderings of this study contribute most crucially in resolving some signifiacant conceptual issues that are related to the perpetually problematic phenomenon of Adjunction. The core finding is that motivation of dissociation/movement of adjuncts from their original pair Merge position comes from C-I interface. The data provides evidence of derivations where it is hard to assume that the freely dissociated adjuncts target a syntactic position (e.g., rightward moving adjuncts cannot be easily accommodated at usual positions which syntax provides for moving elements). This evidence helps in departing from any assumption about morpho-syntactic motivation behind the free dissociation/movement of adjuncts; rather such evidence renders it easy to assume that Chomsky's (2001b) idea of pair Merge, which covers the initial Merge of adjuncts, can be extended to introduce a new operation called Internal pair Merge which takes some adjunct, already present in the derivation, and merges it by a pair Merge to some other constituent. It neither induces intervention effect nor does it depend on c-command relation. The introduction of an operation, with syntactically inert features, helps in finding solution of many conceptual problems faced by previous studies.

In particular, the Internal Pair Merge stipulation helps in eliminating problems posed by counter cyclic merge approach adopted by Lebeaux (1988) and Stepanov (2001)

who view that adjuncts can be inserted late into derivation and cyclicity is not an obligatory condition for such elements. Boskovic (2013) provides a rationale for accommodation of such elements in *Bare Phrase Structure* model by maintaining that phonologically null elements can be inserted late into LF while semantically inert elements can be inserted into PF interface after spell-out. These proposals are highly problematic for SMT which imposes cyclicity of Merge as an inevitable condition on language as a perfect design. To maintain successive cyclic nature of Merge even in the case of adjuncts, Chomsky (2001b) proposes pair Merge which resolves the problem of initial Merge of adjuncts in a derivation, but the dissociation of adjuncts remains unaddressed. For free moving dissociated adjuncts, Chomsky assumes that in their multiple occurances in a strcutrue, they undergo elipses at certain places. This justifaction cannot be a satisfactory accomodation for a narrow syntactic derivation. To resolve such issues, this study proposes that the concept of pair Merge should be extended to another operation Internal Pair Merge which, owing to its syntactically inert nature, allows adjuncts to move freely.

On the basis of evidence provided by data that contains adjunction, this study rejects Kidwai's (2000) position that scrambling (i.e., a phenomenon related to free movement of constituents in a syntactic structure) is XP-adjunction motivated by morpho-syntactic factors. It is accepatable that scrambling is XP-adjunction, but it is very hard to assume that it is triggered by morpho-syntactic factors. There are cases of movement of adjuncts which fail to target a syntactic position. Particularly, rightward movement of constituents urges to find the motivation of such unusual movements at C-I interface. This study finds that adjunction has been problematic because narrow syntax fails to provide any mechanim of their free movement and dissociation form the original Merge position. The problem can only be resolved if their movement and dissociation phenomenon is completely freed from narrow syntax by proposing a syntactically inert operation: Internal pair Merge. The clues of semantic motivation behind linear word order of words can be found in the study of Sproat and Shih (1987, 1991) and Haider (2000) further elaborated in Alexiadou (2013); however, these studies miss a satisfactory mechanism to satisfy conditions imposed by SMT: an important requirement of current

minimalist syntax. The Internal pair Merge eliminates all redundancies and conceptual barriers for reaching SMT.

h) Why do k-expressions in Punjabi move more freely than the wh-expressions of English?

The findings about adjuncts have significant repercussions for another phenomenon explored in this study: *wh-movement* dependencies. In languages like English, the raising of wh-expressions by IM is not very difficult to assume, but in languages like Punjabi where evidence for both wh-raising/movement and wh-*in-situ* facts can be provided with equal distribution it becomes hard to decide in favor of either option. This study finds ample evidence for assuming that the k-expressions (equivalent of English wh-expressions) in Punjabi remain *in-situ* instead of moving to an A' position by the EF of C or *v**, and that the apparent raising of k-expressions is not due to some un-interpretable wh-features of the functional heads or the EF features but the k-expressions may be displaced from the original position because of the usual free movement of the constituents exhibited in non wh/k-derivations. This finding also helps in eliminating the uninterprertable wh-features in languages like English which exhibit wh-movement phenomenon.

In some recent studies, Manetta (2009, 2011) and Bayer and Cheng (2015) found that in South Asian languages the wh-expressions are raised to Spec-*v** instead of remaining *in-situ.* This study finds evidence from Punjabi k-question data which poses problems for raising of k-expressions to Spec-*v** position. In Punjabi k-questions, an equal possibility has been observed for both options (i.e., k-expression remain in-*situ* or they move lefward or rightward to different positions). The flexible surface order of k-questions renders it hard to assume for k-exprssions that they move to a particular syntactic position Spec- *v**. Particularly, Manetta's and Bayer and Cheng's proposal can in no way be assumed for rightward movement of k-expressions. The derivations involving anomolous rightward movement or reduplication of a number of k-expressions help in reaching the conclusion that in k-question these are not the k/wh-featrues which induce the movement of k-expressions; rather the k-expression carrying constituents undergo movement like usual constituents of declarative structures.

Contribution of the Present Study

The Contribution of this study is multifaceted. First of all, it has addressed some crucial problems in the existing accounts that provide comparison between nominative and ergative case alignment patterns (i.e., obtained during the derivation of CPs by Merge operation). On the basis of strong empirical evidence from The Punjabi language, it has rejected the claim that ergative is a structural case like nominative which is assigned to the subject NPs in English under Agree. Similarly, on the basis of evidence found from un-ergative derivations, it has rejected the claim that ergative may be a dependent case relying on the presence of a lower NP in the clause. Contrary to such assumptions, this study finds in line with the assumption that ergative is an inherent case assigned at theta position by the functional head *v*/*v** to the EA at the time of merge. More importantly, this study has proposed solution to the problematic issue of case on object IA in transitive clauses. On the basis of concrete facts rendered by the Punjabi data, it is suggested that IA is assigned accusative by the functional head *v*/*v** instead of T, as reported by some major studies on other South Asian Languages, and the *-nuu* marking on IA is accusative instead of dative as assumed by some other studies.

Secondly, this study has contributed significantly in determining the status of *by-phrases* in English passives. A comparative study of data from both languages has helped this study in assuming that such phrases are adjuncts in both languages. In this regard, the overt facts from Punjabi phrases containing *-kolo*/*-de kolo* markings (i.e., the counterpart of English by-phrases) have helped reaching at conceptually satisfactory solution to the status of the English by-phrases.

Thirdly, this study has proposed mechanism of an Internal Pair Merge operation (i.e., an extension of Chomsky's Pair Merge) which may take adjuncts and merge them to a position which is not allowed by an A or A' movement. This proposal may prove very helpful for future studies on free movement of adjunct like constituents in general and for studies on languages with relatively free word order in particular. This proposal has rendered significant results for accommodating asymmetrical nature of adjuncts under successive cyclic proceeding of derivation (i.e., a requirement of SMT). Hence, the mechanism of Internal Pair Merge may be practically utilized for analyzing

the syntactic structures, across languages, wherein certain constituents assume syntactically asymmetrical positions.

In the last section, this study has proposed that Punjabi k-elements, the counterparts of English wh-elements, remain *in-situ* and their apparent movement is in fact not wh-movement as manifested in English; rather the k-elements move equally freely like the usual non-k-elements. On the basis of empirical evidence (e.g., rightward movement of k-elements), this study assumes contrary to some recent claims about the movement of wh-elements to Spec-*v** or some higher position (i.e., Spec-C). This result has strengthened the assumption about elimination of wh-features which are usually supposed to be the motivation behind wh-movement in languages like English.

Suggestions for the Future Research

On the basis of empirical evidence found during analysis of data, this study puts forth the following suggestions for future researches in the field.

First of all, the future studies may consider it necessary to identify, as clearly as possible, the difference between case assignment mechanisms of the two major case alignments systems: nominative and ergative. An intermingling of the properties of one case type to the other has rendered conceptual gaps to the existing accounts. Particularly, with reference to ergative, if it is assumed that such case is not assigned under Agree operation, it should not be assumed to value the un-interpretable features of the case assigning functional head *v**/*v*. An awareness and clear identification of the difference between case assigning mechanisms of the two systems may help a study in identifying the parametric differences in the properties of core functional categories, among different languages. Secondly, this study suggests a need for broadening the scope of C-I interface to accommodate the affect of discourse/pragmatics related features on syntactic derivations. For instance, future studies may utilize and refine the conceptual underpinnings of the Internal Pair Merge operation which has been suggested by this study to maintain the cyclic nature of syntactic derivation (i.e., according to SMT). Such operations find motivation from the requirements of C-I interface. Crucial to this suggestion is the fact that as the *prima facie* asymmetrical constituents like adjuncts may

be allowed to enter into derivation by a distinct type of merge (i.e., pair Merge), they may be allowed to dissociate from their initial Merge position by virtue of a distinct type of movement which may be called Internal Pair Merge. A special focus on broadening the scope of C-I interface may save the future studies from suggesting some non-syntactic operations. Thirdly, the EF of the phase defining heads C and *v** need to probed further because the properties of EF are not as clear as the properties of other features that trigger Agree or Internal Merge.

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