

**What Language Looks Like:
A Conceptual-Metaphoric Reading of Minimalism**

Mohamed Mazen Galal, PhD
English Department, Faculty of Arts, Suez University

Abstract

One way to check how language is conceived is to examine the types of metaphors it is described by. This study is a step on this way. The researcher detects the language used by minimalism to see how language is thought of according to this linguistic program. This paper ventures to detect the conceptual metaphors underlying the minimalist program, particularly in its early version in Chomsky's Minimalist Program (1993, 1995). Those early versions of minimalism are particularly focused on since they represent the original essence of this linguistic project. Reading the relevant minimalist literature, the researcher has found out that two metaphors dominate the minimalist thinking about language: LANGUAGE IS A MACHINE, and LANGUAGE IS AN ECONOMIC ENTITY. The latter metaphor subsumes two subsidiary metaphors: LANGUAGE IS AN ECONOMIC SYSTEM, and LANGUAGE IS AN ECONOMIC STRUCTURE. The present paper discusses the structure of the relevant metaphors and the implications of the conceptual-metaphoric reading.

Keywords: Conceptual Metaphor, Minimalism, Language Form.

1. Introduction and Theoretical Background

1.1 An overview and structure of the study

This study aims at detecting the conceptual metaphors underlying the minimalist theory (minimalism), one of the most aspiring formalist theories on the structure of human language. To achieve the objective of the study, this paper is structured as follows. Sub-section 1.2 surveys the Conceptual Metaphor Theory (CMT) explaining its main tenets and the potentials it can offer to understand the underlying structure of different life aspects including physical and nonphysical entities. By introducing this part, it is possible to briefly explain what insights CMT can offer to analyze minimalism. Section 1.3 explains the basics of minimalism, and how it is different from previous linguistic generative inquiries. Surveying minimalism focuses on how it deals with language as being an economic entity that works efficiently in accordance with simplicity and parsimony. Section 2 motivates the study by explaining the rationale for conducting such types of study and the contribution it can offer to

linguistic theory. Section 3 presents the sources of data for this study and illustrates the methodology applied for carrying it out. The questions that this study tackles are presented in section 4; those questions are the springboard for conducting the analysis, the central part of the study, in section 5. The results and conclusion of the study are offered in section 6, the final part of the paper.

1.2 The Conceptual Metaphor Theory

The Conceptual Metaphor Theory (CMT) initiated by Lakoff and Johnson (1980; 2003) is instrumental in detecting the underlying conceptual structure of spoken and written language. It is based on the idea that the human conceptual system is established via metaphorical images that guide thinking processes and, thus, shape the way we experience the world we live in.

Contrary to how metaphor is regularly seen as being "a device of the poetic imagination and rhetorical flourish—a matter of extraordinary rather than ordinary language...as characteristic of language alone, a matter of words rather than thought or action" (Lakoff and Johnson, 2003, p. 4), Lakoff and Johnson see it as an instrument of thought, easy to detect in everyday expressions. It is essential to thought and action, hence: "what we experience, and what we do every day is very much a matter of metaphor" (p. 4).

Lakoff and Johnson explain how a concept might be metaphorical. They show this through various examples. To mention only one, they tackle the concept TIME and the conceptual metaphor TIME IS MONEY. Lakoff and Johnson elaborate on the metaphorical concept TIME IS MONEY as revealed in contemporary English by the following expressions (p.8):

You're *wasting* my time.

This gadget will *save you* hours.

I don't *have* the time to *give you*.

How do you *spend* your time these days? That flat tire *cost me* an hour.

I've *invested* a lot of time in her.

I don't *have enough* time to *spare* for that. You're *running out of* time.

You need to *budget* your time.

Put aside some time for ping pong. Is that *worth your while*?

Do you *have* much time *left*?

He's living on *borrowed* time.

You don't *use* your time *profitably*. I *lost* a lot of time when I got sick.
Thank you for your time.

According to this theory, conceptual metaphors have two domains: the Source Domain, the one from which we draw the metaphorical expressions, and the Target Domain, the one intended to be explained; for example, with the expression TIME IS MONEY, MONEY is the source domain, (domain of experience), while TIME is the target domain intended to be interpreted. The process of mapping across those conceptual domains puts the two elements together (TIME and MONEY) so that one can see the common ground, resemblances and parallels that exist between the source and the target (TIME is thus understood in MONEY terms (e.g., wasted-saved-given-budgeted, left ,borrowed, etc.). Metaphor, as asserted by Lakoff and Johnson, is primarily based on this mapping, and language is only secondary. From this standpoint, metaphor is defined as “a cross-domain mapping in the conceptual system” (Lakoff and Johnson, 2003, p. 203).

Based on the belief that concepts interfere into our everyday activities, and that our conceptual system plays a key role in defining our everyday realities, it necessarily follows that "what we experience, and what we do every day is very much a matter of metaphor" (p.4).

Ever since its initiation, CMT has had applications and implications in various fields. CMT has been proven to be of real benefit to foreign language teaching (FLT). Kövecses (2003, p. 311) maintains, “the theory of conceptual metaphors is emerging as a new tool that is capable of providing serious assistance to both teachers and students in teaching and learning foreign languages”. Boers (2000, p. 563) found that CMT is capable of easing the process of retaining unfamiliar conventionalized expressions. Kövecses (2001) has also found that CMT is capable of motivating arbitrary parts of language such as idioms and fixed expressions, which facilitates foreign language learning and teaching.

CMT has played a crucial role in cross-cultural studies showing how metaphor may influence or be influenced by culture. Numerous studies have dealt with the use of CMT to detect how different people in

different cultures may perceive reality with respect to various feelings and emotions (Gibbs, 1996), cultural bodily experience (see e.g. Yu (1998), time and space (e.g. Lakoff, 1994), cultural ideologies and background, social practices, cultural models and conflicts (e.g. Kövecses, 2005). The use of CMT has yielded fruitful results in the cultural field so that various scholars have applied numerous universal models to their local cultures.

CMT has also been applied to study economic language. The case in point is a study conducted by Silaški and Annamaria (2011) on the expressions relevant to the metaphor, MONEY IS A LIQUID in English, Serbian and Romanian. The study concludes that English, Romanian and Serbian cognitively share the MONEY IS A LIQUID metaphor. Translating money terms of English into Serbian and Romanian sometimes maintains metaphoricality, and may lose this on some other occasions. This study has also confirmed that our bodily experience plays a major role in shaping our conceptual reality.

CMT has also been proven very useful in analyzing official documents; the case in point is Maalej's study (2008) on analyzing an official document on learning and education issued by the Tunisian government. Other studies of metaphor of heuristic and pedagogic value include Bowers (1992); Green (1993); Lazar (1996); Deignan, Gabrys, and Solska (1997).

The usage of metaphor in various forms of spoken and written communication is taken for granted (see the works of Gibbs, 1994; Mio & Katz, 1996; Landau, Meier, Keefer, 2010); in addition to being used in fields such as advertising and marketing (Arndt, 1985; Hunt & Menon, 1995), it is highly prevalent in the political arena (Mio, 1996, 1997; Lakoff, (2004).

Since CMT has great revelatory power to understand reality as the studies above show, it is worth attempting to shift to a new area where it is possible to apply CMT to understand how influential linguistic theories, such as minimalism, might view human language. Detecting the nature of human language has always been a central question of the science of linguistics over the past decades; however using CMT to look

into how language is perceived is probably a new ground that this study intends to break¹.

Having briefly surveyed CMT and its potentials in structuring and understanding various topics, the following subsection will go over the theory of minimalism and its concept of language structure and derivation. This is intended to pave the road for using CMT machinery to detect the underlying image of language as seen by this groundbreaking formalist inquiry.

1.3 Minimalism

The focus of this paper is on understanding the conceptual metaphors underlying the minimalist framework of Chomsky (1993, 1995), and the relevant literature. I devote this part to explaining the main tenets of minimalism tracing it back to the history of the syntactic generative theory, illustrating the course of derivation in minimalism and motivating the minimalist view of language.

The main engine driving linguistic research since the beginning of generative grammar has been to account for what Chomsky (1986, p.xxv) called 'Plato's Problem'. According to Chomsky, the philosophical

1. It should be noted here that minimalist metaphors were sometimes handled; however, they were treated, contrary to the purposes of this study, as merely linguistic rather than conceptual instruments. For example, Haider (2014), rather than looking at the conceptual metaphors embedded in the Minimalist Program, took the metaphors used in minimalism at face value, considering them to be lacking in clarity and in need of empirical verification. Haider was of the view that the Minimalist Program was in need of having an empirical support. It needed to pass the scientific threshold since many of the metaphors used in the program were used just for the sake of conjecturing rather than being a reflection of a true linguistic reality that can be empirically verified. He lamented the use of metaphors such as "procrastination", "greed", and "last resort", considering them "insignificant except as terminological short-cuts for specific relations with a precise theory-internal meaning". (p. 8). He pointed out that the minimalist metaphors were not an expression of something real since they are intangible. Commenting on the 'feature movement' metaphor, Haider ridiculed the metaphor as being detached from reality: "How do features move? Do they evaporate in thin air and come down like dew? Are they crawling across phrases up the tree like invisible ants? Did anyone ever observe a foraging flock of features?" (p. 11). Thus, while believing that the language of minimalism has to follow the scientific rules, Haider tackled metaphors from the linguistic rather the conceptual perspectives. He looked at minimalist metaphors as means of language rather than as means of thought, contrary to the logic of the conceptual/cognitive enterprise, which this study adopts, that considers metaphor a means of thought,.

Plato's problem is "the problem of explaining how we can know so much given our limited experience" (1986, p.xxv). From a linguistic perspective, this problem refers to the wide gap between grammatical competence that children acquire in an amazingly short period and the impoverished linguistic experience (input) they are exposed to². The generativists' solution to this dilemma has been to assume that children are equipped with an innate capacity to pick up language. Such an innate capacity includes some general principles of Universal Grammar (UG), together with open parameters that can be set in various ways and activated by the grammatical information, known as Primary Linguistic Data (PLD), to which children get an access in the environment where they grow up.

To go back as far as the 1960s, Chomsky (1965) introduced three evaluation criteria: observational adequacy, descriptive adequacy, and explanatory adequacy. The explanatory adequacy was the focus of his effort. In the 1970s, X-bar theory was introduced, according to which any phrase including NP and VP has its specifier, head and a complement. In the beginning of the 1980s, many construction-specific and language-specific transformational rules were abandoned, and instead language-universal principles were adopted e.g. Move-alpha, Case Theory, X-bar Theory, Bounding Theory, Binding Theory, etc. and parameters such as the 'head parameter'. This came to be formally known as Government and Binding (GB) (1981). The main proposal of this theory is that differences between languages are only surface issues and that the basic structure of languages boils down to the same principles with different values of parameters. (See Jang, 1997)

Finding an answer to 'Plato's Problem' has preoccupied the generative theory, and the criterion of success has always been to 'explain'; such tenets of theory evaluation as 'simplicity', 'economy' and 'naturalness', however, were not given due attention and were indeed overshadowed by the explanatory demands of the problem. In the early 1990s, Chomsky (1993, 1995) and Chomsky & Lasnik (1993) overhauled

2. Hornstein et al. (2005, p. 1) explain Plato's problem simply as follows: "the grammatical information that can be gleaned from the restricted data to which the child has access, the primary linguistic data (PLD), is insufficient to explain the details of the linguistic competence that the mature native speaker attains. In other words, the complexity of the attained capacity, the speaker's grammatical competence, vastly exceeds that of the PLD, all the linguistic information available to and taken in by the child".

the real nature of various linguistic operations so that many of which came to be placed into new perspective. This new endeavor came to be called the Minimalist Program (MP), or minimalism. With minimalism, it became possible for linguistic theory to incorporate evaluation criteria such as those mentioned above. (For more discussion, see Hornstein et al., 2005).

The main view of minimalism is that economy principles evaluate derivations. Conceptual necessity is a filter on levels of representation so that the levels of representations considered not conceptually necessary are removed. Hence, Deep Structure (DS) and Surface Structure (SS) vanish. Well-formedness applies to Phonetic Form (PF) and Logical Form (LF), the two levels that interface with the two general types of performance systems, the articulatory perceptual (A-P) (the system for speech perception and production where sound is interpreted) and conceptual-intentional (C-I) (the system for meaning interpretation), respectively.

Having surveyed what minimalism is and overviewed the tenets of CMT, what the paper ventures to do is to apply CMT to minimalism in order to understand how language is conceptually perceived under this ground-breaking linguistic theory; this can be best done by applying the cognitive machinery of conceptual metaphors.

2. Rationale for the Study

This research is conducted with the purpose of detecting the conceptual metaphors underlying the most recent theory in formalist syntax, minimalism. It is interesting to discover how the formalist theories, such as minimalism, treat language and tackle its various aspects. What mainly drives research into this area is the special character of language used to introduce minimalism. Given the scarcity of studies on applying CMT on language theories, this study fills a wide gap and motivates further research in this area.

3. Data and Methods

The data for this paper is obtained from the minimalist literature mainly initiated by Chomsky's' works (1993, 1995) and the relevant works on the theory including Haegeman (1994), Radford (1997, 2009), and Hornstein et al (2005), among others. The researcher had to

sift through various writings on minimalism to select those items or aspects that reflect metaphoricity one way or another, particularly those terms that show the possibility of mapping from one domain to another (*target* and *source* domains, in CMT terms).

With respect to the methods of the study, the study puts into operation the main perspective of the Conceptual Metaphor Theory (CMT) as launched by Lakoff and Johnson (1980; 2003) based on the notion that one conceptual domain (Target Domain) is understood in terms of another (Source Domain). According to the CMT, the human conceptual system is built on a set of mental metaphorical images that guide our way of thinking and experience of the world. The research looks into the expressions and the linguistic particularities of a particular discourse (in this case how minimalism uses certain terms to describe human language) and detects the mapping process through investigating how the target domain (LANGUAGE in the current research) is understood in terms of the relevant source domains projected by minimalist thinkers.

4. Questions of the study

In view of the objectives and purpose of the study, the study attempts to answer the following three questions:

1. What are the conceptual metaphors underlying the perception of language according to minimalism? This question is meant to explain the metaphors built by minimalist scholars and how they represent their view of language.
2. What source domain (s) are mostly used to structure the target domain of LANGUAGE?

The importance of this question lies in determining the source domains to which language is mapped. This is intended to mirror the philosophy of language adopted by minimalism.

3. What can the conceptual metaphors of LANGUAGE reveal about the nature of language under minimalism?

5. Analysis and Discussion

Based on the methodology of detecting conceptual metaphors and the data described in section 4, the analysis section presents and motivates the conceptual metaphors underlying the minimalist theory, particularly the basic foundations of minimalism that are given in Chomsky's 1993, and 1995 works and the relevant literature. It has been found that two main metaphors dominate minimalism: LANGUAGE IS A MACHINE (discussed and analyzed in 5.1), and LANGUAGE IS AN ECONOMIC ENTITY, which is manifested via the two sub-metaphors, LANGUAGE IS AN ECONOMIC SYSTEM, and LANGUAGE IS AN ECONOMIC STRUCTURE (discussed and analyzed in 5.2).

المقطع 1.01 5.1 LANGUAGE IS A MACHINE

Analyzing the language dealt with under minimalism shows language as if it were a machine, so that LANGUAGE is mapped onto and understood in terms of a MACHINE. In minimalism, the derivation goes through certain manufacturing stages as if in an assembly line. The way the model of language is presented under minimalism goes through certain stages until the final product is manufactured. The stages will be presented briefly, then a more detailed account is presented by the end of the current section.

The *lexicon* (mental dictionary) is the first part of the language machine; it includes fully inflected entries (with full features). Then, the elements *selected* from there are arranged in an intermediary stage called *numeration* (Chomsky, 1995, p.226), a set of items selected from the lexicon. Lexical elements are combined and the representation is processed by the articulatory and the conceptual components for pronunciation and, ultimately, for interpretation. Then, comes the *automatic* stage of *Merge* and *Move*, where two linguistic items are combined to make up a new complex item that can be merged again, and so on. The final product goes, then, through the *finishing* stages of Phonetic Form (PF), where the phonological features are stripped away, and the product is given its final shape. Legitimacy (quality) of the final linguistic objects (products), however, has to be determined by the interpretive semantic component, Logical Form (LF). If the derivation is conforming to all LF conditions, it *converges* to become valid for use; if

not, it *crashes*, and the linguistic product is disallowed. The stages of production, then, are as follows, schematized as in figure 1.

Lexicon (Raw Material) -Numeration- Select- Merge & Move- PF- LF (Final Product).

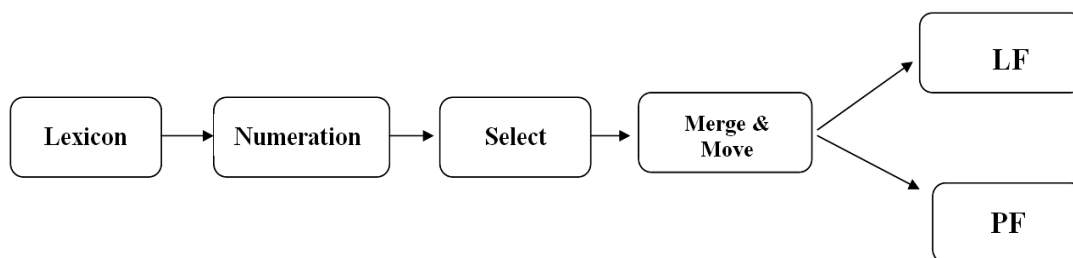


Figure 1. The stages of language production in minimalism

The current part explains each stage of production in more detail. The starting point is that of finding the raw material from which it is possible to build the whole structure. This part is the *Lexicon*. *Lexicon* is seen as one component of grammar; it is some sort of dictionary that includes all lexical items (words) and their linguistic properties; each lexical item is a set of phonological, semantic and grammatical features (N, V, T, C, etc.). Finally, lexical items form lexical arrays, the components of a linguistic expression (Radford, 2009, p. 62). Therefore, the lexicon includes lexical items (words) which are arranged in lexical entries (like in a regular dictionary) and carry lexical properties (Radford, 2009, p.320).

Then comes the second stage of how to tackle the raw material. Since there is no direct access for the Computational System into the lexicon, the required material to build a structure has to be arrayed in a special collection, called the *numeration*.

The computational system needs a starting point from which it is possible to initiate the generation process. Prior to the minimalist project, Deep Structure (DS) was the starting point; since DS was removed for various reasons (see section 5.2), the minimalist program has devised a starting point for generation, the Numeration. What is needed in this level according to Chomsky (1995) (cited in Hornstein et al., 2005, p. 69) are the linguistic items (LI) and the number of instances available for the

computation (i). Here is an example of a *Numeration* given by Hornstein et al. (p. 70) representing the sentence: *That woman might buy that car.*

(1)

- a. That woman might buy that car.
- b. $N = \{ \text{might}_1, \text{that}_2, \text{buy}_1, \text{woman}_1, \text{car}_1 \}$.

As we see for this Numeration { }, all linguistic items needed and the number of their instances in the sentence are available, hence each LI is needed once (indicated by the number 1) while the LI 'that' is needed twice (indicated by the number 2).

So, basically, the derivation starts out with the *numeration*, and derivations that have the same numeration set can only be compared based on some economy principles (See section 5.1). In minimalism, when competing derivations are derived from a numeration that contains the same lexical items, the less optimal derivation is knocked out in favor of the more optimal one. Consider the examples in (2a) and (2b) (from Jang, 2000).

- (2) a. There is a man in the room.
- b. A man is in the room.

As (2) shows, the two sentences (a, b) have different lexical items, hence they are said to have different numerations and are not in competition, both are produced. The situation in (3) is different. (3a) and (3b) are in competition because they use the same lexical items (same numeration set).

- (3) a. There seems t to be a man in the room.
- b. *There seems a man to be t in the room.

The machine has to choose only the structure which conforms to the production method, i.e. structure (product 3a).

Then comes the operation *Spell-Out* where the product starts to take shape (phonetic and semantic features are accessed by Phonetic Form (PF) and Logical Form (LF)), and where actual pronunciation occurs. After Spell-Out, the computation goes on, but there is no way to have a further access to the lexicon/ numeration stage.

PF level represents the phonetic spellout of the linguistic items; its main function is to map the syntactic structure into a pronounceable

content. Only elements contributing to the speech elements are contained in the PF representation (Radford 2009, p.26). The importance of PF level in the production process is that it is the final shape that the product takes.

One case to show how PF works is that of auxiliary cliticization in English. An example of this is the process by which *we have* becomes *we've*; this operation is a PF-mediated one. *Have*, licensed to be the correct syntactic form via agreement with *we* may be fused with that pronoun to make *we've* creating the form /wi:v/ rather than /wi: hæv/ , as a final phonetic spellout.

Another PF component process is the process by which an element can be optionally explicit or implicit (Radford, 2009, p.97). This is the case, for example, of the complementizer 'that' where it is possible to have a null phonetic spellout, with the phonetic features of the complementizer being deleted in the PF component, as the following examples show:

- (4) a. He said that she would come early.
- b. He said she would come early.

The very final stage of language production is the LF stage which represents the level that tests out whether a particular product can be verified for quality (i.e. the structure is understood the way intended to be understood or not); it makes sure, for example, that 'John left' is understood as such, and not as 'I don't think John left' (Hornstein et al., 2005, p. 69). LF, then, represents the *quality control* seal.

In the light of the metaphor LANGUAGE IS A MACHINE, it is possible, then, to see the mapping process between MACHINE and LANGUAGE. The target domain, LANGUAGE, is understood in terms of the source domain, MACHINE. The mapping process goes as follows:

Table 1. The Mapping Process between MACHINE and LANGUAGE Domains

TARGET DOMAIN (LANGUAGE)	SOURCE DOMAIN (MACHINE)
Lexicon	Raw material source
lexical Items (Words)	Raw material that feeds the machine
Numeration	Raw material arranged
Merge & Move	Process of production in progress

TARGET DOMAIN (LANGUAGE)	SOURCE DOMAIN (MACHINE)
PF	Final product Shape
LF	Final Assessment and quality control

The parallel mapping between LANGUAGE and MACHINE can be illustrated in the following diagram:

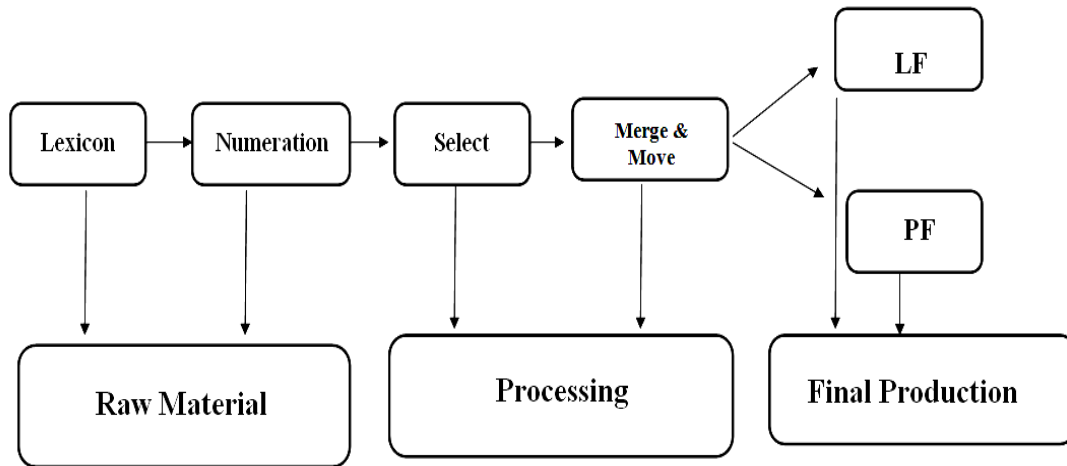


Figure 2. The Parallel Mapping between LANGUAGE and MACHINE Production

To conclude this part, it is possible to say that language is presented in minimalism in machine terms, as illustrated by the exposition above. This fits very much the minimalist philosophy in particular and the generative theory in general since language generation is generally considered an automatic module that is inborn and innate, hence, the underlying conceptual presentation of LANGUAGE as a MACHINE reflects the spontaneity and automaticity of language generation as perceived by minimalism.

The following part presents LANGUAGE in terms of another domain, namely economy. Language from the minimalist perspective, as we shall see, is presented in economic terms. In view of language as an economic system, multiple economic terms are used to describe language. In terms of language being an economic structure, it will be shown that minimalism seeks the smallest (most economic) structure, thus cutting structure levels of previous theories to the most necessary ever.

5.2 LANGUAGE IS AN ECONOMIC ENTITY

This umbrella metaphor about language is an extended one that subsumes two subsidiary metaphors: LANGUAGE IS AN ECONOMIC SYSTEM, and LANGUAGE IS AN ECONOMIC STRUCTURE. The significance of this overarching metaphor can manifest itself through the two subsidiary metaphors explained below.

5.2.1 LANGUAGE IS AN ECONOMIC SYSTEM

Looking over the minimalist literature shows that the language used by theorists of minimalism mainly refers to language in economic terms, specifically as being an efficient economic system. Language description under minimalism uses multiple economic expressions. The part below will show these expressions and their relevance to minimalism.

Chomsky (1995, pp.8-9) discusses the external and internal views about minimalism; the external goal of minimalism, for him, is meant to reduce the number of axioms to the minimum necessary, and the internal objective lies in simplicity and minimal computation. Minimalism requires that all derivations reach the interfaces at the *minimum cost*. The optimal derivation is not judged in isolation but in economic terms, i.e., in comparison with those that have the same numeration

In minimalism, language is economic in many ways. Theory-externally, the number of levels of representation assumed by previous theories such as Government and Binding (GB) is reduced from four to two (see subsection 5.2.2). Movement (Move α) is no longer optional; it is rather restricted only for a checking reason. Internally, as a linguistic framework, the grammatical system in MP has a tendency to be economic, i.e. energy-saving, to decrease the computation and economy of representation.

In accordance with the energy-saving (economic) frame of thinking (metaphors), movement is evaluated in minimalist terms. In terms of saving energy (reducing the burden of language acquisition), movement is restricted in minimalism. While one of the basic principles of movement in previous syntactic theories like GB is: “move anything anywhere freely”, minimalism constrains movement in such a way that you cannot move an item skipping a possible closer position, an

economic energy-saving principle in minimalism referred to as *Shortest Move*. An illustrative example is that of Marantz (1995) shown in (5):

- (5) a. *Have John will t left by the time we get there?
b. *What did you persuade who to buy t?

The two sentences in (5) are ungrammatical³ based on violating *Shortest Move*. In (5a), the more distant head *have* is raised over a closer head *will* (the trace 't' refers to the original position of *have*), to the matrix Complementizer position at the beginning of the sentence, thereby violating *Shortest Move*. Similarly In (5b), the wh-expression *what* is raised to the matrix Comp position, crossing over a closer wh-element *who*, thereby violating economy. This is described in minimalist terms as violating the same economy condition, *Shortest Move*, requiring that an item move to the first appropriate position, no skipping allowed. This is so much in tandem with the economic philosophy of minimalism.

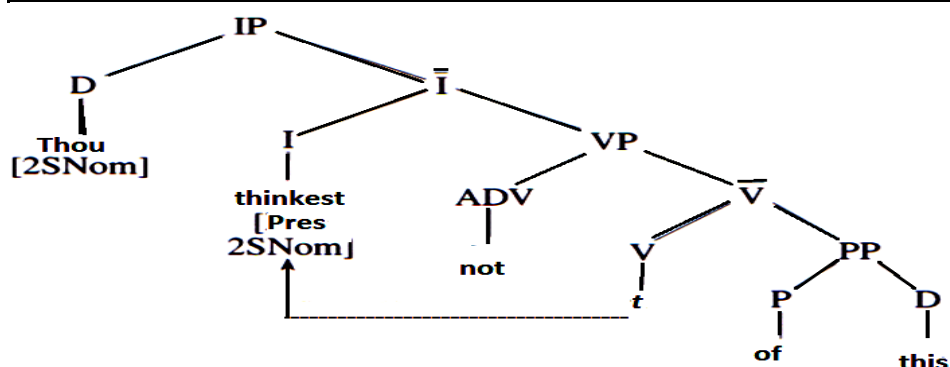
Based on economy considerations, movement is a *costly* operation in minimalism (Chomsky, 1995, ch.4), and it has to occur for a reason; otherwise, it is energy wasting and inefficient. In early minimalism, movement occurred only if the morphological properties of an item (α) itself would not otherwise be satisfied in the derivation, which was the definition of the economy principle of Greed given by Chomsky (1995, p.201). The principle simply implies that an element should move for satisfying its own morphological requirements and not for the target position. In Chomsky's words: "Greed is described as a 'self-serving last resort,' ... operation cannot apply to α to enable some different element β to satisfy its properties" (Chomsky 1995, p. 201).

To take an example of how GREED works, let us consider the simple Early Modern English (EME) sentence

6. *Thou Thinkest not of this* (Radford, 2004, p. 228).

The derivation of the sentence goes as follows:

³ The correct sentences should be: *Will John have left by the time we get there?* for (5a), and *Who did you persuade to buy what?* for (5b).



Looking at this sentence, we see that the verb *thinkest* originating at the lower V position moves to a higher position (leaving a trace 't') so that it can be close to the subject *Thou*. This is necessary since the verb needs to check its second-person singular nominative tense [2SNom] features against those of the subject *thou*; the movement is necessary from V to the inflectional position (INFL, or I) since checking features can only occur in a local relation. Based on Chomsky's GREED principle, we can interpret verb movement to "I" as guided by the selfish desire of the verb to check its own morphological features. The verb *thinkest* satisfies its own interest by coming closer to the subject *thou* and checking off its features.

Movement is made economic according to minimalism by upgrading *Greed* into a more parsimonious principle. Lasnik (1995) develops Greed into what he calls *Enlightened Self-Interest*. *Enlightened Self-Interest* means that the movement is not only motivated by the needs of the moving item, but also by those of the target to which the linguistic element moves or becomes local to it. In the example above, the verb *thinkest* does not move only to satisfy its own needs by checking off its features, but it serves checking off the *thou* features. This is very much in keeping with the economic *efficiency* of movement. In terms of economic principles, it is more efficient if you can make by one move the same effect that you can do by multiple moves.

It is worth noting that the two terms chosen by minimalism are originally economic terms. According to Snowden (2015), the concept of 'Greed' is one of the terms in the economic theory where an individual seeks only his/her selfish interests even at the expense of others; this theory unleashes the powers of the market and everyone plays for himself and market can take care of everything; It is a narrow economic view that

sacrifices social and environmental development (Snowdon, 2015). The same applies to *Enlightened Self-interest*. The application of this latter term in economics means that you have to care about other people's interests while pursuing your own (Snowdon, 2015). This shows the close relation observed by minimalists between economic principles in real life and language economy.

Another energy-saving economic metaphor instance engages the economy principle of *Procrastinate* (Chomsky, 1995, p.228). The main crux of *Procrastinate* as an economy concept is that it is better to do what is needed while saving your energy (no need to *move* (in minimalist terminology), or spend your power); otherwise you have to move. The section below explains how this principle is introduced in minimalist syntax.

According to Lasnik (1995, p.264) *Procrastinate* means that LF movement (covert movement) is preferred to PF movement (overt movement). *Procrastinate* prefers movement to lag as late as possible in a derivation. An example of *Procrastinate* is the raising (movement) of main verbs to Tense before PF in French vs. lack of overt main verb raising in English. Consider the two following examples from Pollock (1989; cited in Hornstein et al., 2005, p.38)

(7) English:

-John often drinks wine.

(8) French:

-Jean *bois* souvent du vin.

Jean drinks often of wine

'Jean often drinks wine'.

Since it is known that the two sentences have the same semantic representation, it is expected that they have the same logical form (LF). How is it possible to explain the French verb *bois* 'drink' preceding the adverb *souvent* 'often'? The explanation offered by Pollock, which agrees with minimalist considerations, is that the verb *bois* 'drinks' in French moves to a higher position preceding the adverb *souvent* 'often', while in English the verb *procrastinates* and does not move before PF (before the spell-out), waiting until it moves invisibly at LF. *Procrasinate* here saves

the English verb the more costly movement before spellout (at PF); it only moves without much gag at PF.

As Marantz (1995, p.357) points out, French tense features have to be ‘visible’ at PF because they are ‘strong’, while their English counterparts are ‘weak’ and, hence, ‘invisible’ at PF. English tense features, therefore, may wait until LF, to move only invisibly to avoid the costly process of ‘overt movement’. The explanation, then, is that English saves the energy expended on overt movement and opts for the silent movement. Hornstein et al. (2005, p. 39) illustrates this situation as follows:

French

a. DS:

[_{IP} ... Infl_{strong-V} [_{VP} adverb [_{VP} V ...]]]

b. SS/LF:

[_{IP} ... V_i + Infl_{strong-V} [_{VP} adverb [_{VP} t_i ...]]]

English

a. DS/SS:

[_{IP} ... Infl_{weak-V} [_{VP} adverb [_{VP} V ...]]]

b. LF:

[_{IP} ... V_i + Infl_{weak-V} [_{VP} adverb [_{VP} t_i ...]]]

As we see in the diagram above, both French and English have the same underlying structure (same DS). While French is forced to move the adverb ‘souvent’ based on its strong inflection feature (marked as ‘INFL strong’ in the French examples a, b), English *procrastinates* and prefers the less costly LF movement based on its inflection weak features (marked as ‘INFL weak’ in English a, b data).

Another example to show that language might prefer to save energy and use the less costly *Procrastinate* rather than to hastily move is the case of moving a question word to a front position in the sentence (Wh-movement). Let us first consider what happens in such a type of movement.

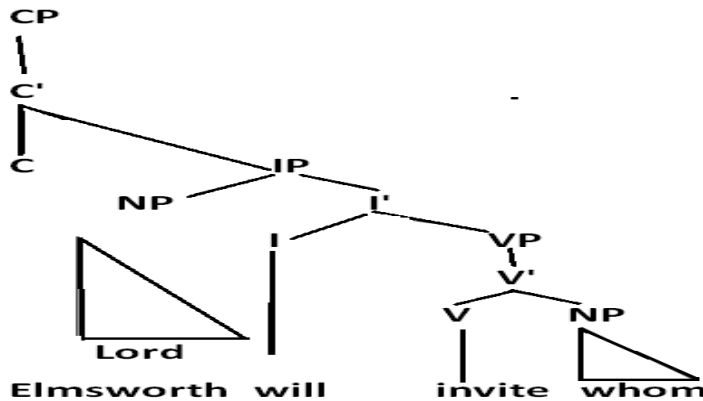
As is well-known, the wh-element replaces the word asked about. For example, the sentence:

(9) *Lord Elmsworth will invite John,*

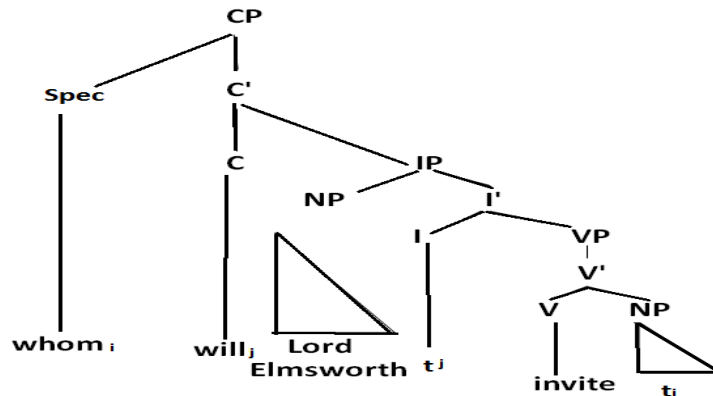
would underlingly become:

(10) *Lord Elmsworth will invite whom,*

as illustrated by the following diagram (based on Haegeman, 1994, p. 372):



What is regular in wh-movement is that the Wh-element moves to the front position, the specifier of the complementizer phrase [Spec, CP], as the following example shows:



As the example above indicates, *whom* is fronted (moved) to [Spec, CP] position and *will* moves to the inflection position [I] since it carries [Tense] features. As shown in the tree diagram above, this occurs because the structure needs to be interpreted by the semantic component (LF) as a question.

In view of the illustrations above, consider the following examples from English (a) where the wh-word (what) is fronted and Chinese (b) where the wh-word *shenme* 'what' remains in situ (in its original position without movement to a front position) (Radford 2004, p.17):

- (11) (a) **What** do you think he will say? (English)
 (b) Ni xiangxin ta hui shuo **shenme** (Chinese)
 'You think he will say **what**?'

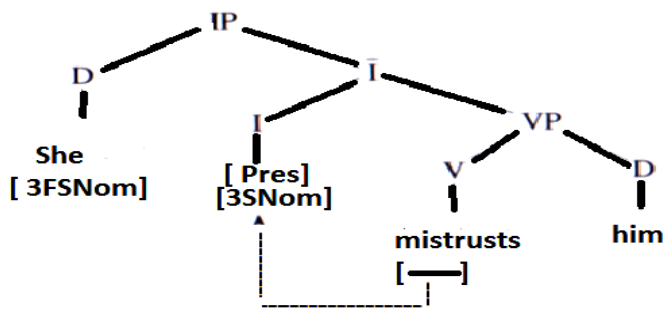
Offering the reason why it is the case that English preposes (moves) Wh-element to a front position is that strong features of the wh-element in English forced the Wh-word to move to a front position (as the tree diagram above shows). Chinese, on the other hand, applies and submits to *procrastinate* since it does not need to move phonologically and waits only for the invisible LF level to receive interpretation.

According to Haegeman (1994, p. 505) wh-movement relates to the morphological strength of the wh-feature on the wh-constituent. This means that when the wh-feature is morphologically strong, movement occurs before the spell-out level and it should be phonologically there; the interpretation offered by Haegeman is that the wh-feature is strong in English and weak in Chinese (and similar languages such as Japanese).

Movement is described in minimalist literature as being a *last resort* process, only triggered by the need to check the features of one linguistic item against those of another. A lexical item is a bundle of phonological, semantic, and formal features. Features, for Chomsky (1993), are either strong or weak and no strong features should remain at LF. Weak features must be checked after Spell-Out, as late as possible by the economy principle *Procrastinate*, as shown above. The derivation crashes at LF if features are not checked.

In order to minimize efforts, you may *procrastinate* as indicated above; you may also come midway between full movement and moving only relevant features without having to move the whole lexical item (*last resort*); this means that you can only half-move (moving the features of the lexical items only without moving the whole entity); this economic process is called *attraction (percolation)* (Chomsky, 1995, p.297). According to Radford (1997, p.229), this process is involved in deriving structures such as (12) diagrammed below:

(12) She mistrusts him.



As explained by Radford (1997, p.229), the whole structure is an Inflectional Phrase (IP) headed by the empty Inflection (I). The specifier of IP is the pronoun *she* which carries 3rd person, feminine, singular, nominative features [3FSNom], the INFL (I) is empty and needs to match the features of the specifier *she*, this can occur by one of two ways: the whole head (along with each features) moves to I position, or the features of the verb *percolate* to INFL (I) position, leaving the head *mistrust* in its position. According to Radford, only the verbal [3FSNom] features are attracted, as the tree diagram shows, to satisfy INFL (I) features so that they can be checked against those of the specifier *she*. What moves in this structure are only the features carried by *mistrusts*.

Radford explains that *attraction* (sometimes called *percolation*) is part of the economy principle, since full movement is not implemented given that only partial movement "the minimal set of features" is enough to satisfy the requirement for the structure to be saved. What we see here is a highly economical process since what moves is only what is needed. Full movement is a *costly* and *last resort* process. Thus, Radford stipulates that:

Attraction is more economical than movement, since movement affects both the phonetic and the grammatical features carried by a word, whereas attraction involves movement of grammatical features alone: hence, the economy principle will ensure that attraction will be preferred to movement wherever possible" (p.230).

The analysis of the metaphor above shows clearly the parallels between language operations and the economic system processes in real life. The use of terms such as *minimum cost*, *Greed*, *Enlightened Self-Interest*, *Procrastinate*, *Shortest Move*, *Attraction*, *Last Resort* is not haphazard; it underscores a minimalist thinking of how language system

works. The mapping process of the metaphor LANGUAGE IS AN ECONOMIC SYSTEM between the source domain ECONOMIC SYSTEM and the target domain LANGUAGE, then, can be displayed as follows:

Table 2. The Mapping Process between LANGUAGE and ECONOMIC SYSTEM

Term	Meaning in Source Domain (Economic system)	Meaning in Target Domain (Language)
<i>minimum cost</i>	keeping the cost of a service or a commodity at minimum	All derivations reach the interfaces (LF & PF) as simple as possible.
<i>Greed</i>	Being concerned only about one's economic interests.	An element should move for satisfying its own syntactic requirements, not those of the target position.
<i>Enlightened Self-Interest</i>	Keeping one's interest while observing others' interests, too.	Movement is not only motivated by the needs of the moving item, but also by the interests of the target to which the linguistic element moves.
<i>Procrastinate</i>	Economizing on saving energy until the last moment.	A linguistic item should avoid the costly movement until the very latest.
<i>Shortest Move</i>	Shortest distance is optimum for saving energy.	A linguistic item moves to the first appropriate position in a derivation.
<i>Attraction (percolation)</i>	Spending part of energy is better than spending	Moving the minimal set of features of a

Term	Meaning in Source Domain (Economic system)	Meaning in Target Domain (Language)
	whole energy.	lexical item only without moving the whole entity.
<i>Last Resort</i>	Do not spend energy unless you have to.	Movement of a linguistic item is a <i>last resort</i> triggered by a necessary operation

This part has illustrated the metaphor LANGUAGE IS AN ECONOMIC SYSTEM, which is part of the umbrella metaphor LANGUAGE IS AN ECONOMIC ENTITY. It has been elucidated that minimalism introduces language in economic terms, thus reflecting the minimalist conception of language as being an optimal system that excludes unnecessary and excessive operations.

The following part introduces the other part of the overarching metaphor LANGUAGE IS AN ECONOMIC ENTITY, namely the metaphor LANGUAGE IS AN ECONOMIC STRUCTURE.

5.2.2 LANGUAGE IS AN ECONOMIC STRUCTURE

The metaphor LANGUAGE IS AN ECONOMIC STRUCTURE represents one aspect of LANGUAGE IS AN ECONOMIC ENTITY metaphor. According to the T-Model adopted by Government and Binding theory (GB), shown below, language has four levels of representation: DS (Deep Structure), SS (Surface Structure), PF (Phonetic Form) and LF (Logical Form).

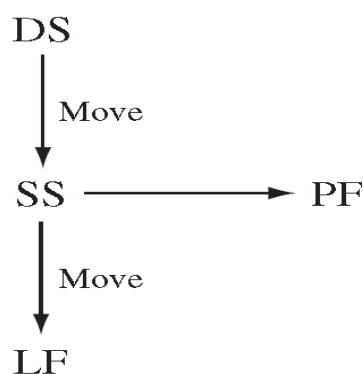


Figure 3. The GB T-model of the Grammar (Hornstein et al., 2005, p.23)

According to the figure above, DS represents the underlying structure of a derivation, while SS level represents the movement of lexical items until they get their final stage where a structure is phonologically substantiated; this is not the end of the process since it is possible for covert movement operations to occur to make sure that the semantic representation is correct, which is verified by LF level of representation.

The minimalist program cut down the previous GB levels (DS, SS, LF, PF) leaving intact only two levels, PF and LF. The minimalist program, thus, minimizes language structure. According to some assumptions, which will be explained below, minimalism removes the superfluous levels of DS and SS. The minimalist model shown below includes only two levels of representation; the semantic level of representation: LF, and the phonetic level of representation: PF.

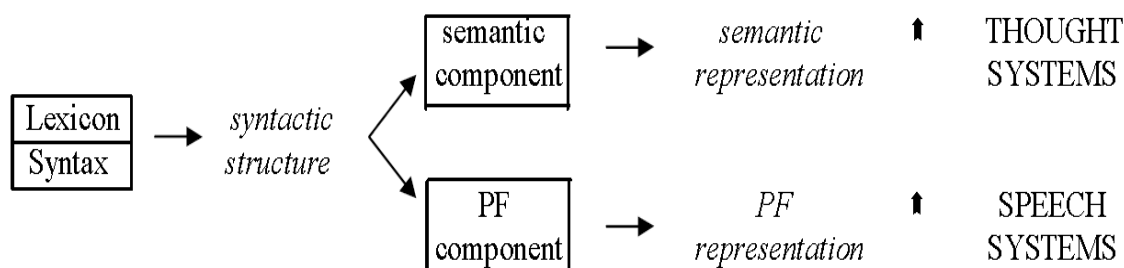


Figure 4. The Minimalist Model (Radford 2004, p. 3)

Therefore, under minimalism, language is a highly parsimonious structure that uses the minimal requirements ever. In keeping with this line of thinking, the fact that language system eliminates two levels of structures that are found to be redundant and superfluous under minimalism, the dual structure of PF and LF, is based on the parsimonious (economic) philosophy of Occam's razor. According to this cost-conscious frugal theory, any unnecessary, superfluous parts must be removed and excluded, and as long as you can furnish a simpler account, there is no need to come up with more complex solutions. This theory has wide applications in various fields. Given the simplicity and economic orientation of the minimalist theory, it is very much in tandem with the economic nature of Occam's razor.

The removal of the DS and SS levels off minimalism is not without reasons. The following section motivates why DS and SS are

considered economically excessive, and hence should vanish according to the minimalist assumptions

The existence of DS as a level in GB is based on the empirical grounds that it is capable of accounting for the difference between structures such as raising and control constructions. Consider examples (13) from Hornstein et al. (2005, p.51).

- (13) a. John seemed to leave early.
b. John hoped to leave early.

Aside from the semantic difference between the two sentences, there is a difference in the thematic structure of both sentences. In (13b), *John* assumes two thematic functions, one thematic role to satisfy *hoped*, and another to satisfy *leave*; in (13a), *John* has only one thematic role, which is to satisfy *leave*, given that *seem* does not discharge a theta role.

This distinction can be captured by positing a DS level at which (13a) has the DS as in (14a) and SS as in (14b), while (13b) has DS as in (15):

- (14) a. [seemed [John to leave early]]
b. [John_i seemed [t_i to leave early]]

- (15) John hoped [PRO to leave early].

In (15) it is shown that *John* discharges its role with *hoped*, and the *PRO*⁴ representing *John* at the infinitival phrase is inserted at DS since it is required by DS that all predicates have to discharge their theta structures. Postulating DS level, then, is the key to understanding the semantic difference between the structures that appear to be the same on the surface.

In the 1995 version of minimalism, however, Chomsky gives the reason why he is doing away with DS. He argues that DS is empirically insufficient to account for some structures like *tough-movement constructions*. Consider the following example from Chomsky (1995, p. 188):

- (16) John is easy to please.

⁴ According to Radford (2009, p. 400), PRO is "a null-case pronoun (known informally as 'big PRO') which represents the understood subject of an infinitive complement of a control predicate, e.g. in a structure such as '*John decided PRO to leave*'".

In constructions like the above, *John* is assigned an objective theta role since informally *John* is the person to be pleased by someone else; so, at DS, *John* is assigned a theta role; however, at SS *John* appears in a subject position and is supposed to assume a subjective theta role. The sentence, then, shows that at DS *John* is assigned two theta roles:

(17) a----- is easy to please----DS

This hypothesis is not valid based on the fact that by virtue of Theta-Criterion: "each argument should bear one and only one theta-role, and that each theta-role associated with a given predicate should be assigned to one and only one argument" (Radford, 2009, p. 406). This problem shows that positing a DS level here does not work. The proposal by Chomsky here is that a lexical item, such as *John*, can be inserted in a non-theta position in the course of derivation, and then can be assigned its theta role at LF. This means that postulating DS structure could not resolve problems such as those above since it is possible to assume that *John* is assigned two theta roles at DS; therefore, this level is considered inefficient, superfluous, and Chomsky dispensed with it completely.

Hornstein et al. (2005) give further reason why it is possible to do without DS. As mentioned earlier, one of the characteristics of DS is generativity; DS is required for recursion. However, DS could prove useless if we utilize *Merge* and *Move* strategy (i.e. merging linguistic items together and moving them over the course of derivation) to replace the DS condition that Phrase Structure rules have to be applied first before movement can occur. This strategy replaces and, in fact, nullifies the DS condition that all lexical properties must be satisfied before movement. Thus, generativity can occur without DS.

It is worth mentioning here that GB also needed to postulate DS level for reasons related to x-bar Theory. Minimalism proposed that the strategy of *Merge* and *Move*, also, would replace x-bar Theory on the grounds that any bar-level category such as N', V', and A', considered merely a relational notation, are representational redundancy to which linguistic computation is blind (Jang,1997).

Minimalism also eliminates SS. The importance of SS level under GB is that both case and binding conditions apply there. It is the level at which covert syntax materializes. Moreover, many of the

language variation accounts depend on contrasting overt and covert syntax.

Under the economic philosophy of minimalism, the application of Case Theory and Binding Theory does not need to posit the superfluous SS-level since these two theories can hold at LF. There exists a piece of evidence that it is possible for the Binding Theory to hold at LF. Consider the examples in (18), from Cook and Newson (1996, p. 331):

(18) Which picture of himself_i did Mary say John liked t_i.

John is the antecedent of *himself*. Since the wh-phrase (*Which picture of himself*) moved to a position at which *John* cannot c-command and hence cannot bind *himself*, this means that it is not possible for *John* to c-command or bind *himself* at the visible surface structure; this implies that the binding process sometimes does not take place at SS level, hence this structure is not necessary; the possible solution is to assume that the sentence gets reconstructed, which means that all parts of the wh-phrase, except the wh-element itself, have to reconstruct to their original position. This provides a proof that Binding Theory can apply at LF, without the need to postulate an SS entity. This knocks the bottom out of the argument that binding has to apply at SS and lends plausibility to the view that it is possible to do without SS. This provides an argument that Binding Theory can hold at LF.

Considering the situation above, it seems that minimalism tries everywhere to ensure that language is an efficiently economic structure that limits itself only to what is necessary. If LF and PF can play the same role done by DS and SS, those two latter levels of representation must be removed. The situation explained in this section is that minimalism thinks of language in terms of being AN ECONOMIC STRUCTURE.

The mapping process between the source domain (LANGUAGE) and target domain (ECONOMIC STRUCTURE) builds the relation between LANGUAGE and ECONOMIC STRUCTURE since it is posited here that, in accordance with economic considerations, language has to incorporate only the necessary structures; two levels of structure, (PF and LF) can do the same work done by the previous four levels (DS, SS, PF and LF). The following table shows the parallels between the two

domains of the metaphor LANGUAGE IS AN ECONOMIC STRUCTURE.

Table 3. The Parallels between the Source and Target domains of the Metaphor LANGUAGE IS AN ECONOMIC STRUCTURE

Term	Meaning in Source Domain (Economic Structure)	Meaning in Target Domain (Language)
Structure	A structure has to be only at the necessary limits.	Language structure has to be only at the necessary limits.
Levels of Structure	It is unnecessary to posit multiple levels of structure if the work needed can be done by a fewer number of levels.	The 4-way DS-SS-PF-LF structure is replaced by the 2-way LF-PF structure.
Alternatives	Use more optimal, economic alternatives when necessary.	Government , Binding , and Case theories are replaced by more economic alternatives under LF-PF scheme.

It is evident from the previous table that source and target domains quite fit; the metaphor here reflects the minimalists' perception of language as being of simple and optimal structure, which is their solution to the nagging question of how children acquire language so fast when their experience of the word is so inadequate, known in language acquisition literature as poverty of stimulus.

This sub-metaphor, LANGUAGE IS AN ECONOMIC STRUCTURE, together with the previous one LANGUAGE IS AN ECONOMIC SYSTEM, completes the umbrella view of language under minimalism as being AN ECONOMIC ENTITY.

6. Results and Conclusion

This paper has presented an account of what language looks like according to the minimalist philosophy using CMT as an instrument of analysis.

In response to the questions posed by the study concerning the conceptual metaphors underlying the perception of language according to minimalism, the analysis part shows clearly that language is understood in terms of the metaphors: LANGUAGE IS A MACHINE, and

LANGUAGE IS AN ECONOMIC ENTITY, substantiated by the two sub-metaphors, LANGUAGE IS AN ECONOMIC SYSTEM, and LANGUAGE IS AN ECONOMIC STRUCTURE. The source domains by which language is fleshed out, thus, are a MACHINE and ECONOMIC ENTITY (SYSTEM & STRUCTURE). The metaphors presented here are very revealing about the nature of language under the minimalist philosophy. As pointed out, the main crux of the minimalist endeavor is to limit the grammar to the bare essentials, the most necessary, and the most optimal. *Merge* and *Move* strategy has become the machinery of generativity and only interface levels, PF and LF, remain. Movement has to be licensed by a necessary purpose. Explanation depends merely on a small number of assumptions. Since minimalism is a formalist theory, perhaps the most renowned formalist account, the metaphorization of language as a machine readily reveals the automaticity and autonomy of language workings. According to the Chomskyan view, the autonomous, innate, and universal characteristics of language are spontaneous and automatic, disconnected from external world issues (Lakoff and Johnson, 1999). Building language concept in terms of a MACHINE, then, is not strange to the generativists' view of language, and is consequently inherited by the minimalism program, being an extension of the old generative theory.

Structuring language in economic terms as revealed by the metaphor LANGUAGE IS AN ECONOMIC ENTITY also fits the minimalists' view of how language works and their solution to the philosophical Plato's problem (section 1.3). The study has described how language generation is presented in economic terms: all derivations have to be at minimum cost: moving an item to a long distance is not allowed as long as a nearer item can do the required task (Shortest Move); an item has to be so economic as to care for its own derivational interest (Greed), or to be more economic as to satisfy its own interests and those of others (Enlightened Self-Interest); there is no need to move if you do not have to (Procrastinate); you can move only if you have to (Last Resort). This economic language is quite appropriate and actually reflects the minimalist philosophy of considering language structure simple enough to allow children to natively acquire in such an amazingly short time (Plato's problem). The simplicity of grammar structure is also reflected by

the sub-metaphor LANGUAGE IS AN ECONOMIC STRUCTURE, since the multiplicity of language levels adopted by earlier versions of generative theory boils down merely to a dual level under minimalism.

This study has also revealed the capacity of CMT to unravel the underlying concepts of theories. It is taken for granted that CMT has been capable of detecting the metaphors underlying different aspects of various disciplines; this study emphasizes the validity of CMT to analyze the fundamental concepts of theories in general, and language theories and written discourse in particular. The study has found that the mapping process between source and target domains offered by CMT can pictorially illustrate the hidden structure of the aimed target, which is LANGUAGE in this study. The economic aspect of language is given a fresh look through CMT instruments by demonstrating the striking parallels between economic and linguistic aspects.

The results of the study have confirmed the view that our thinking is embodied (Johnson, 2007); reading through the written discourse of minimalism shows that thinking about such abstract subjects as language is grounded in human bodily experience; our human experience with tangible things as machines and economic realities structures the way we think of language; this was substantiated via the language used by minimalist theorists.

Since the study has limited itself mainly to early versions of the minimalist theory (1993, 1995), it can be more fruitful if further studies are conducted to trace the later developments in the theory and check how far the theory has deviated from its earliest convictions. This is one value of CMT as it becomes easy to compare the frame of thought adopted about language at a given point and that adopted at later developmental stages. It is hoped that future research can tackle written discourse of various language theories, which is expected to illuminate how language theories evolve and project their stances towards language.

References

- Arndt, J. (1985). On making marketing science more scientific: Role of orientations, paradigms, metaphors, and puzzle solving. *Journal of Marketing*, 49, 11-23.
- Boers, F. (2000). Metaphor awareness and vocabulary retention. *Applied Linguistics*, 21, 553-571.
- Bowers, R. (1992). Memories, metaphors, maxims, and myths: Language learning and cultural awareness. *ELT Journal*, 46(1), 29–38.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*. Cambridge: MIT Press.
- Chomsky, N. (1981). *Lectures on Government & Binding*. Dordrecht: Foris.
- Chomsky, N. (1986) *Knowledge of Language: Its Origin, Nature, and Use*. New York: Praeger.
- Chomsky, N. (1993). A minimalist program for linguistic theory. In K. Hale and S. J. Keyser (Eds.), *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger* (pp.1-52). Cambridge, MA: MIT Press. [Reprinted in Chomsky (1995), pp.167–217.]
- Chomsky, N. (1995). *The Minimalist Program*. Cambridge: MIT Press.
- Chomsky, N. and H. Lasnik.(1993). The theory of principles and parameters. In J. Jacobs, A. von Stechow, W. Sternefeld, and T. Vennemann (Eds.), *Syntax: An International Handbook of Contemporary Research* (pp.506–69). Berlin: Walter de Gruyter. [Reprinted in Chomsky (1995), pp.13–127.].
- Cook, V. & M. Newson. (1996). *Chomsky's Universal Grammar. An Introduction*. Oxford/Cambridge, Mass.: Blackwell. Second Edition.

- Deignan, A., D. Gabrys & A. Solska (1997). Teaching English metaphors using cross-linguistic awareness-raising activities. *ELT Journal*, 51(4), 352–360.
- Denham, K. (1998). *A minimalist account of optional wh-movement*. Unpublished PhD Diss., the University of Washington.
- Gibbs, R. (1994). *The poetics of mind: Figurative thought, language, and understanding*. New York: Cambridge University Press.
- Gibbs, R. (1996). Researching Metaphor. In Cameron, L& Low, G. (Eds.), *Researching and Applying Metaphor* (pp. 29-47). Cambridge: Cambridge University Press.
- Green, T. (1993). Learning without metaphor. In A. Ortony (Ed.), *Metaphor and thought* (second edition, pp. 610–620). Cambridge: Cambridge University Press.
- Haegeman, L. (1994). *Introduction to Government & Binding Theory*. Oxford: Blackwell, second edition.
- Haider, H.(2014). *Scientific ideology and scientific conduct -Metaphors one lives by in the Minimalist Program*. Ms. Univ. Salzburg – Dept. of Linguistics & Centre for Cognitive Neuroscience. Retrieved from http://www.uni_salzburg.at/fileadmin/multimedia/Linguistik/2014_Scientific_ideology_and_unscientific_conduct_in_linguistics.pdf.
- Hornstein, N., J. Nunes & K. Grohmann. (2005). *Understanding Minimalism*. New York: Cambridge University Press.
- Hunt, S. & Menon, A. (1995). Metaphors and competitive advantage: Evaluating the use of metaphors in theories of competitive strategy. *Journal of Business Research*, 33, 81-90.

- Jang, Y. (1997). *Tense and Complementizer Feature-Checking*. PhD Dissertation, Harvard University, Cambridge.
- Jang, Y. (2000). *The Minimalist Program: An introduction*. Ms. Chung-Ang University, Korea.
- Johnson, M. (2007). *The Meaning of the Body*. Chicago: University of Chicago Press.
- Kövecses, Z. (2001). A cognitive linguistic view of learning idioms in an FLT context. In M. Pulz, S. Niemeier, & R. Dirven (Eds.), *Applied Cognitive Linguistics II: Language Pedagogy* (pp.87-115). Berlin/New York: Mouton de Gruyter.
- Kövecses, Z. (2003). Language, figurative thought, and cross-cultural comparison. *Metaphor and Symbol*, 18 (4), pp. 311-320.
- Kövecses, Z. (2005) *Metaphor in Culture* .Cambridge: Cambridge University Press.
- Lakoff, G. (1994). What is a Conceptual System? In F. Overton & D. Palermo, D. (Eds), *The Ontogenesis of Meaning*. (pp.41-90). Hillsdale NJ: Lawrence Erlbaum Associates.
- Lakoff, G. (2004). *Don't think of an elephant: Know your values and frame the debate*. White River Junction, VT: Chelsea Green Publishing.
- Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By* .Chicago: The University of Chicago Press.
- Lakoff, G. & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Thought.
- Lakoff, G. & Johnson, M. (2003). *Metaphors we live by* .Chicago: The University of Chicago press.
<http://dx.doi.org/10.7208/chicago/9780226470993.001.0001>.
- Landau, M. Meier, B.P., Keefer, L. A. (2010). A metaphor-enriched social cognition. *Psychological Bulletin*, 136, 1045-1067.

Lasnik, H. (1995). Verbal morphology: Syntactic Structures meets the minimalist program. In H. Campos and P. Kempchinsky (Eds.), *Evolution and Revolution in Linguistic Theory: Essays in Honor of Carlos Otero*. Washington, DC: Georgetown University Press, 251–75. [Reprinted in Lasnik (1999), [pp.97–119.]

Lasnik, H. (1999). *Minimalist Analysis*. Oxford: Blackwell.

Lazar, G. (1996). Using figurative language to expand students' vocabulary. *ELT Journal*, 50(1), 43–51.

Maalej, Z. (2008). Metaphors of learning and knowledge in the Tunisian context: A case of re-categorization. In E. Berendt (Ed.), *Metaphors for learning* (pp. 205-223). Amsterdam and Philadelphia: John Benjamins.

Marantz, A. (1995). The minimalist program .In *Government and binding theory and the minimalist program*, ed. Gert Webelhuth. Cambridge, Mass.: Blackwell.

Mio, J. (1996). Metaphor, politics, and persuasion. In J. S. Mio & A. N. Katz (Eds.), *Metaphor: Implications and Applications* (pp. 127–145). Mahwah, NJ: Erlbaum.

Mio, J. (1997). Metaphor and politics. *Metaphor and Symbol*, 12, 113-133.

Mio, J. & Katz, A. N. (Eds.). (1996). *Metaphor: Implications and applications*. Mahwah, NJ: Lawrence Erlbaum Associates.

Pollock, J. (1989). Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry* 20, 365-424.

Radford, A. (1997). *Syntactic Theory and the Structure of English*. New York: Cambridge University Press.

Radford, A. (2004) *English Syntax: An Introduction*. Cambridge University Press, Cambridge.

Radford, A. (2009). *An Introduction to English Sentence Structure*. New York: Cambridge University Press.

Silaški, N. & Annamaria, K. (2011). The Money Is a Liquid Metaphor in Economic Terminology – A Contrastive Analysis of English, Serbian And Romanian. *PROFESSIONAL COMMUNICATION AND TRANSLATION STUDIES*, 4 (1-2), 63-72.

Snowdon, C. (2015). *Selfishness, Greed and Capitalism: Debunking Myths about the Free Market*. London: The Institute of Economic Affairs.

Yu, N. (1998). *The Contemporary Theory of Metaphor: A Perspective from Chinese*. Amsterdam: John Benjamins.

