

Economy, Simplicity and Uniformity in Minimalist Syntax

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Abstract: *The Minimalist Program (MP) is a theory of grammar developed by Chomsky (1993) whose core assumption is that grammars are minimally complex, perfect systems of optimal design. MP was born out of an emerging notion of economy, developed in GB Theory, which suggested that language, was based on different kinds of principles from those which had previously been considered; an economic system would only operate principles if they were required. In fact that the main objective of the Minimalist Program (MP) can be defined as economy in derivation and the simplicity of grammar resulting in uniformity, rapidity, and ease of language acquisition on the part of human language acquirers. This paper gives an overview of the three prominent concepts in the Minimalist Program that is, Economy, Simplicity and Uniformity.*

Keywords: *Minimalist Program, Economy, Simplicity, Uniformity*

1. INTRODUCTION

The past few years have seen the development of an approach to the study of language that constitutes a fairly radical departure from the historical tradition, having the generative grammar at its origins. Within the tradition of generative grammar, the most prominent focus of linguistic research has been the syntactic component, the part of language concerned with the grammatical organization of words and phrases.

The most prominent reformulation of transformational generative grammar has been the Minimalist Program proposed by Chomsky (1993).

The first thing in the case of language that strikes us is the diversity of languages, the range of variation. But as the generative program has shown in its short but rich history, this range of variation is to be understood against the background of a universal language faculty. The minimalist program calls attention to the underlying simplicity of this Universal Grammar, and in so doing emphasizes the Unity of type that must be part of the explanation of the emergence and growth of this aspect of the natural world. Because this unity is especially hidden in the daily diversity of languages, it is critical to adopt a Galilean perspective at the core of minimalism so as not to lose sight of the positive constraints that in part, perhaps in large part, helped shape our language faculty. (Boeckx, 2006)

According to Boeckx (2006) the minimalist program has a particularly strong commitment to the Galilean vision of natural phenomena and theory construction. In fact minimalists believe that nature is the realization of the simplest conceivable mathematical ideas, and the idea that a theory should be more highly valued if it 'gives us a sense that nothing could be changed, a sense of

uniqueness, a sense that when we understand the final answer, we will see that it could not have been any other way' (Weinberg, 2001).

In minimalist program the major attempt has been to simplify the theory of the syntax of natural language to the greatest possible extent. As Allot (2003) mentions, the leading idea of minimalist program is the rejection of all devices and constructs apart from those that are absolutely essential on conceptual ground.

Chomsky's goal in the Minimalist Program (MP) is to reduce GB/PPT as much as possible to general principles of economy, to reduce derivations to their most primitive components, and to eliminate as much as possible the formal devices that had developed around the MGG approach. An accompanying goal is to eliminate redundancy in grammatical formulations in order to achieve uniformity.

In what follows an overview is given on the concepts of Economy, Simplicity and Uniformity.

2. ECONOMY

Economy condition is an important theme in recent generative grammar principle which states that syntactic representations should contain as few constituents and syntactic derivations and involve as few grammatical operations as possible. There are different kinds of this principle which will be discussed in the following sections.

2.1. Last Resort

The most widely used economy condition is probably the principle of Last Resort.

The condition can be stated as:

A syntactic operation may apply only if the derivation would otherwise result in an illegitimate representation at the interfaces. While the various formulations of the cycle have had the effect of drastically reducing the search space or reference set, limiting the domain of application of syntactic operations, the Last Resort condition has helped eliminate superfluous steps in derivations.

2.2. Economy of Derivation

This principle asserts that there should be no superfluous steps in a derivation. This kind of economy prefers shorter derivations which make the fewest steps. Short moves are also preferred to long ones.

2.2.1. Relativized Minimality

A further aspect of the economy of derivation can be viewed from the perspective of Relativized Minimality. According to this principle all movements must be to the nearest possible position, where the range of possible positions is determined by the properties of the moved element. Simply put, this principle favors shorter movements over longer ones. It is easy to see how this fits with the idea of economy: the more distance covered by a movement, the costlier it is, and hence there is pressure to keep the links between the elements in a movement chain to a minimum. This principle is therefore called the Minimal Link Condition. MLC seems to be in conflict with the requirement that derivations should contain the fewest steps: the shorter the movements, the more movements needed to cover the distance. One possible solution to this conflict is that chains, i.e. the moved element and all its traces, are added to a structure as a single element in one derivational step. This would allow the MLC to be upheld without lengthening the derivation.

2.3. Procrastinate

Procrastinate is a kind of timing principle which states that:

"Movement occurs as late as possible in a derivation." (Culicover 1997, p.349)

In the computational system of MP there is a point in which a grammatical representation of the derivation splits, called the spell-out. This point determines what points are necessary before the pronunciation of a sentence and which ones are not. So, the principles that govern the path to Spell-out are different from those that govern the path to LF. The principle called procrastinate comes here into play: this principle prefers derivations that hold off until after spell-out since

covert movements are considered to be more economical than overt movements. Therefore, overt movements must be motivated by morphological forces such as Case, Agreement and WH-features: an element moves overtly only if otherwise the derivation of the sentence crashes. Chomsky makes a distinction between weak and strong features: for example WH-features are strong in English while they are weak in Japanese. Strong versions have to be checked before spell-out and hence for overt movement. Weak features wait until after the Spell-out to force the covert movement. WH-features in English, therefore, force an overt movement, while WH-features in Japanese force a covert movement.

2.4. Global Versus Local Economy

Global economy demands the comparisons of entire sets of derivations as opposed to the comparison of local points within a single derivation.

As Collins (1997) has shown, examples that were originally thought to make global economy comparisons can be explained in different ways. Global economy principles gradually made way to local economy conditions, conditions that compare steps in a derivation at the point when those steps should be taken, not once the entire derivation has been computed. Local economy was seen as a reduction of the space of the reference sets, in a way that was seen as lessening the computational memory load, hence more efficient from a computational perspective.

2.5. Economy of Representation

Economy of representation asserts that there should be no superfluous elements in the representation of a structure. The main principle which demonstrates this kind of economy is Full Interpretation, which states that every element in an expression must receive an interpretation.

2.6. Economy of Grammar

This principle is the heart of a minimalist approach to language. It investigates the possibility that human language design meets the Bare Output Conditions imposed on it from those systems with which it interfaces in an optimal way.

3. SIMPLICITY

Chomsky tried to develop an idea of 'simplicity' for grammars that could be used to sort out the "linguistically significant generalizations" from among the alternative possible sets of grammatical rules.

As Freidin and Vergnaud (2001: 641) have observed, Chomsky's earliest writings on generative grammar (Chomsky 1951, 1955) already contain allusions to simplicity. Freidin and Vergnaud (2001: 641 n. 2) point out that Chomsky's (1951) notion of simplicity bears some general similarity to the more current discussions of economy. For the formulation of any relative precise notion of simplicity, it is necessary that the general structure of the grammar be more or less fixed, as well as the notations by means of which it is constructed. The notion of simplicity should be broad enough to comprehend all those aspects of simplicity of grammar which enter into consideration when linguistic elements are set up.

Thus what is hoped to be gained is the reduction of the number of elements and statements, any generalizations, and, to generalize the notion of generalization itself, any similarity in the form of non-identical statements, to increase the total simplicity of the grammar. Chomsky asserts that as a first approximation to the notion of simplicity, shortness of grammar is considered as a measure of simplicity and such notations will be used as will permit similar statements to be coalesced. (Chomsky 1951).

To avoid circularity, the notation must be fixed in advance and neutral to any particular grammar. Given the fixed notation, the criteria of simplicity governing the ordering of statements are as follows: that the shorter grammar is the simpler and that among equally short grammars, the simplest is that in which the average length of derivation of sentences is least. (Chomsky 1951)

Similarly, in Chomsky (1955), an entire chapter (chapter 4) is devoted to 'simplicity and the form of grammar'. Although minimalist themes resonate with Chomsky's earliest writings, such themes could not be systematically investigated before the 1990s because there was a more pressing goal: understanding how the child acquires the language of her environment given the

poverty of stimulus. It was only after the P&P approach was found adequate in solving the language acquisition problem, in separating the universal from the language-specific, and the principles from the parameters, that the shape of principles, the deeper why-questions, could begin to be asked.

Minimalism can be seen as a thorough investigation of the principle of simplicity, interpreted realistically, that is, as applying to a real object, the human language faculty. The inquiry amounts to the following task. Once the shape of the human language faculty has been fixed (the task of the Principles and Parameters approach), can we show that (to paraphrase Galileo) language always complies with the easiest and simplest rules, that it employs only the least elaborate, the simplest and easiest of means?

It is important to note that asking this minimalist question is an integral part of the development of the Galilean style in linguistics.

Methodologically, it is a necessary step. It ‘may still be premature’ (Chomsky 2001), or ‘not be appropriate at the current level of understanding’ (Chomsky 2000a), in the same way in which Einstein’s attempt to unify all the forces of physics was premature.

But it is a central part of the generative program. Without it, linguistics would be, as Kant puts it a science, but not Science; that is, a special, isolated scientific inquiry, as opposed to a part of Modern Science.

4. UNIFORMITY

Chomsky (2001) suggests the Uniformity Principle as:

In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances.

Miyagawa (2010) focuses on grammatical features and proposes Strong Uniformity:

Every language shares the same set of grammatical features, and every language overtly manifests these features.

There are four types of uniformity: Morphological, Interface, Structural and derivational.

4.1. Morphological Uniformity

If there is no F-selection, *L-uniformity* (language uniformity) as stated below applies (Sigurðsson 2004a, 2011):

Any normal human, hence any human I-language, IL_x, has access to any F-atom, F_y, regardless of whether or how F_y is expressed in (the externalized form of) IL_x.

This is a relatively weak version of L-uniformity, since it does not claim that all I-languages *are* identical, it only states that they are not in principle excluded from being identical. However, L-uniformity suggests that E-language variation is largely due to externalization variation. As Berwick and Chomsky (2011) mention:

Parameterization and diversity would be mostly—possibly entirely—restricted to externalization. That is what we seem to find: a computational system efficiently generating expressions interpretable at the semantic–pragmatic interface, with diversity resulting from complex and highly varied modes of externalization, which, furthermore, are readily susceptible to historical change.

4.2. Interface Uniformity

(IU) is the assumption that sentences with the same meaning share a syntactic representation. If meaning is determined by deep structure, as in ST, sentences with the same meaning have the same deep structure representation. For example, the active and the passive are derived from the same representation, and the passive transformation does not affect their meaning. This point was generalized in MGG to the assumption that transformations in general do not add or change meaning (the Katz-Postal Hypothesis, Katz and Postal 1964).

Broad application of IU in the form of the Katz-Postal Hypothesis in the 1960s and early 1970s led to the emergence of Generative Semantics (GS). Consistent with ST, GS assumed two levels

of syntactic representation, DS and SS. If transformations do not alter meaning, all meaning should be determined at DS. Without a distinct syntactic level to represent logical form, GS concluded that DS was equivalent to the meaning. The decline of GS by the mid-1970s was propelled by a number of factors, most notably a failure to properly distinguish between genuinely syntactic and non-syntactic phenomena.

Failure to distinguish in the theory among syntactic ill formedness, semantic anomaly, presupposition failure, pragmatic infelicity, and so on, made it impossible to construct an explanatory account (Katz and Bever 1976).

4.3. Structural Uniformity

Structural Uniformity (SU) requires that if two constituents in two different sentences have the same grammatical function, then they have the same underlying representation.

The canonical application of SU is to English *wh*-questions (1a) and similar A' constructions, such as topicalization (1b) and relative clauses (1c).(1)

- Who_i did the police arrest t_i?
- Sandy_i, the police finally arrested t_i!
- I was introduced to the person [_Swho_i the police arrested t_i].

Crucially, the filler has the same grammatical function as it (or a similar constituent) would have if it was in the position marked by the gap. SU thus requires that the filler occupy this position in deep structure. Classical MGG derivations apply movement to map such a structure into one in which the filler is in the A' position, forming a chain, as shown below:

[the police finally arrested Sandy_i] ⇒ Sandy_i [the police finally arrested t_i]

4.4. Derivational Uniformity

Assuming that at least some structures are derived by transformations, sameness of structure is captured by assuming Derivational Uniformity (DU). A typical case is sluicing, exemplified below:

The police arrested someone, but I don't know who.

The second clause means 'but I don't know who the police arrested'. By IU, the two questions must have the same syntactic representation. By DU, since the full question has *wh*-movement (an MGG assumption), so must the sluiced case. So the derivation of the above example involves at least *wh*-movement of *who* and deletion of *the police arrested*.

5. CONCLUSION

The general aim in Minimalist Program is to develop a theory of grammar based exclusively on natural concepts, as is required by 'virtual conceptual necessity' (Allot, 2003, p.3). The idea is to develop as conceptually economical a theory as possible. This paper provided an overview of three concepts which are at the heart of Minimalist Program: Economy, Simplicity and Uniformity. At first, a number of different economy conditions were discussed: Last resort, Economy of Derivation, Procrastination, Global versus Local Economy, Economy of Representation and Economy of Grammar. Then the concept of simplicity which measures the number and conciseness of the theory's basic principles was discussed.

The last principle that was addressed was Uniformity condition which requires that the relations established by a given element A must be ordered in a specific way and form a natural class, that is, be of a specific type. Morphological, Interface, Structural and derivational uniformity were the four types of this principle discussed in this regard.

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