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Universalism in SLA: Data-driven and theory-driven approaches

Shahram Naghdiani*, Firoozkouh branch, Islamic Azad University, Tehran, Iran.

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Abstract

This review article is an attempt at giving an account on the principles of the universalism in SLA. The aim is to especially present the differences between data-driven and Theory-driven approaches. The article does especially rely on Mclaughlin (1987). The major contribution of this paper is presenting Grammar Universals (GU) as opposed to Universal Grammar (UG) proposed by Chomsky. The article concludes that both data-driven and theory-driven approaches can complement each other in their attempt to provide a better picture of human language faculty.

Keywords: SLA, Theory-driven, data-driven, language.

*ADDRESS FOR CORRESPONDENCE: **Shahram Naghdiani**, Firoozkouh branch, Islamic Azad University, Tehran, Iran.
E-mail address: sooshans@gmail.com

1. Universalism in SLA

Whenever we attempt to discuss what is "universal," we are inevitably delving into the broadest of categories, for "universal" refers to everything or everyone in the universe, without exception, encompassed in a singular category of thought. The very concept of "universalism" is extensively inclusive, meaning that it extends to all, without exception, and therefore includes all, without exception, in the class or category being considered. It necessarily comprehends an "all-ness in oneness" which allows for no exception (Fowler, 2004).

There is much ambiguity in the popular usages of the term "universalism." The term has been used in the context of philosophy, sociology, religion, and elsewhere. According to McLaughlin (1987), one of the ways to find an answer to the problem of the extent of the effect of system-external and system-internal factors – Nature vs. Nurture debate (Craine & Pietroski, 2001)- is through the very 'Universalist' perspective. The foundations to the universalist approach raises from the belief of the proponents of universalism in the inadequacy of linguistic input plus non-linguistic principles of cognition to account for the ultimate attainment of both child and adult language learners (McLaughlin, 1987). This belief would naturally lead to the consideration of an intrinsic, i.e. innate, linguistic component, present in all humans at the service of language attainment. Universalists, have taken different approaches to the study of language universals, according to Gass (1984). Two of the most famous of these approaches have been, according to McLaughlin (1987), the data-driven approach of Greenberg and the Theory-driven approach of Chomsky.

2. The Data-driven Approach (Grammar Universals)

Greenberg's approach is data-driven. As an inductive approach, Data-Driven approach, according to McLaughlin (1987), makes conclusions based on the examination of the surface features of a wide range of human languages in an effort to determine how languages vary and how they are the same. Taken by Greenberg, this approach begins by analyzing the data driven from a representative sample of world's languages. The goal is to extract universal patterns. In this way, one could conclude that, in line with the Universal Grammar, data-driven approach is a systematic inquiry in search of Grammar Universals (GU).

The term universal typology refers to a field of study in which patterns that exist among the languages of the world are researched and the possible variations found in human languages are described. The specification of language universals and the study of language universals is based on discerned patterns in this variation, the limits of variation defining the universals. Thus the study of language universals and the study of langue typology are complementary to each other; the study of universals focuses on what is common to all languages and the study of typology focuses on the variation that exists between languages (McLaughlin, 1987).

Universal typology, according to Croft (2004), is fundamentally cross-linguistic in nature. From a different perspective, according to Culbertson (2012), the study of universals is concerned with what human languages have in common, while the study of typology deals with ways in which languages differ from each other. In other words, this approach deals with the study of differences across languages. This, according to McLaughlin (1987), can be fulfilled only by sampling from a wide range of languages at the service of distinguishing universal patterns. In addition, "typological universals are the manifestations of deep linguistic principles which constrain human language Conceived of as learning biases, these principles or constraints delimit the space of hypotheses entertained by the learner, and therefore facilitate language acquisition" (Culbertson, 2012).

3. Contirbutions of GU to UG and SLA

The data-driven approach is realized through the language typology. As a systematic approach to the study of variation of the world's languages, language typology searches for Grammar universals (GU) – on the condition that we consider grammar, as stated by Cook

(1991), the knowledge of language that the speakers posses in their minds, the linguistic or grammatical competence. In this way, the study of GU is closely tied to the study of UG. Traditionally, according to Cullbertson (2012), language typology would seek derivations from the abstract linguistic principles in L1 and L2 acquisition. In this way, the linguistic principles used for predicting derivations have been taken from the studies of UG.

The existence of a set of principles constraining possible linguistic systems not only facilitates learning, but predicts that systems which conflict with these principles will be impossible to learn, and therefore not expected to arise in human language. Typological universals thus provide a potentially strong confirmation of this prediction, and accordingly are often the starting point from which to formulate specific UG principles. (ibid, p. 312)

According to McLaughlin (1987), in developing a typology, the inquiry starts with examining the actual representations of a particular parameter in order to find out if the possible logical variations can be found across languages. For example, according to Greenberg (1974), VSO languages have prepositions. In this way, there would be 4 possibilities; i) VSO with prepositions ii) VSO without prepositions, iii) non-VSO with prepositions, and iv) non-VSO without prepositions. Looking in the representative data driven from a multitude of world languages, one would find out that there is an abundant number of languages that can be placed into categories i, iii, and iv. However, there is no language to be classified under category ii. In this way, language typology can lead to the establishment of GU principle.

Further to this discussion, McLaughlin (1987) introduces a classification for the universals. There are properties of language that can be claimed to be present or absent in natural languages. These properties stand alone and are not dependent on any other properties of the given language. McLaughlin introduces them as non-implicational universals. Meanwhile, there are properties to any given language whose presence depends on the presence of some other properties. These properties are called implicational. Another perspective to classify universals considers those universals that are absolute, i.e., without exception and those that have exceptions, the tendencies. Other scholars, especially more recent ones

(Culbertson, 2012; Cook, 1991; Haspelmath, 2005) do consider the category of statistical universals of language. According to Cook (1991), they are aspects of grammar that are common to many, sometimes all languages.

Recent research into GU has proposed some challenges to the overall claim that language typology can reflect constraints on learning. On the one hand, the findings of some research, according to Culbertson (2012), signify “domain-general cognitive constraints rather than principles specific to the linguistic systems” (p. 311). Second, recently new alternatives have been come up by scholars to take the place language typology; these alternative, according to Culbertson (2012), focus on system external factors – nurture- and their effect on typological asymmetries (Bybee, 2009). Finally, it is now believed that many of these universals are statistical tendencies.

4. Accessibility hierarchy and acquisition sequences

In 1977, Keenan and Comrie (Cited in Cook, 1991), found out the similarities in how languages combine main and relative clauses. Based on their findings, the kind of the word in the relative clause used as a link to the main clause was the basis for the similarities. In this way, some words were easier for learners to access for the use in the relative clause. This led to the suggestion of the accessibility hierarchy for the different types of clauses. McLaughlin (1987) considers this hierarchy a typological finding.

According to Cook (1991), there are six types of relative clauses. Cook names them types 1 to 6 and gives an account on their specs. These 6 types are ordered in a particular order. It should be mentioned that not all languages have all these 6 types of relative clauses. At this stage, the difference across the languages is how far they go down the hierarchy. Moreover, “the psychological difficulty of relative clauses varies in accordance with the hierarchy, type 1 being

least difficult to understand, type 6 most difficult" (Cook, 1991). It should also be noted that according to Cook (1991) this hierarchy corresponds to the sequence of acquisition of theirs in L2. However, according to McLaughlin (1987), claims based on accessibility hierarchy need to be approached cautiously; as is reported by Gass in McLuaghlin (1987), there are possible cases of L1 and L2 factors' counterbalancing role which results in a non-hierarchical ordering in L2 acquisition.

5. The interlanguage

According to Kumpf (Cited in McLaughlin, 1987), markedness considerations could lead to the appearance of forms that were not present in either the first or the target language. She provided evidence for this claim, studying tense/aspect system of the L2 learners. According to Kumpf, the Interlanguage (IL) reflects the capacity of the learners in creating idiosyncratic forms. In spite of the fact that these forms do not conform to either L2 or L1 of the learners, they are still, according to Kumpf, consistent with language universals (or GU).In addition, according to Adjemian (Cited in McLaughlin, 1987), the IL should not contain the structures that violate the Language universals (GU). By the same token, the IL should not develop in a way that it violates the predictions of the accessibility hierarchy or the predictions made on the basis of markedness.

6. The application of acquisition sequences in SLA

In this way, one can conclude that, "everything else being equal, teaching should follow the order of the Accessibility Hierarchy" (Cook, 1991). This leads Lightbown & Spada (2006) to conclude that, " second language learners, like first language learners, pass through sequences of development" (p. 82). Lightbown & Spada (2006) further state that the existence of an order of acquisition in L1 development might not seem that surprising as it is tied to what they already have in common, what they cognitively share and develop, and what they experience in common. However, when it comes to L2 learners, the same story does not seem to be existent; acknowledging this variation in system intrinsic and extrinsic circumstances, "it is remarkable that we find developmental sequences that are similar in the developing interlanguages of learners from different backgrounds and also similar to those observed in first language acquisition of the same language" (Lightbown & Spada, 2006).

7. The artificial language learning paradigms

As a matter of fact, the best source of knowledge on learning is natural languages. However, Artifical Language Learning (ALL) paradigms have been used since 1960s in order to study the process of language learning, under controlled laboratory settings. The natural human languages, according to Folia, Vries, Forkstam, Peterson, & Udden (2010) are very difficult to study. Part of this difficulty is due to the impossibility of isolating the factors effective in language learning. One could take the example of the interdependence of the semantic, syntactic, phonological, and other components of a sentence-long utterance to understand the extent of the impossibility of this inquiry. ALL was therefore developed to pave the way for gaining control over the influences of various components of natural languages. This could give a better experimental control over the input to the learners, according to Folia et al (2010). Culbertson (2012) introduces studies in Reber (1967) in-which experimental participants trained on strings of input generated by 'artificial finite-stage grammars'. Quite interestingly, the participants could generalize the patterns they acquired to newer stimuli. The basic assumption of ALL research is that "some of the learning mechanisms are shared between artificial and natural language acquisition" (Folia et al., 2010). Generally speaking, according to Christiansen (2000), artificial language learning (ALL) can function as an additional, complementary paradigm for exploring and testing hypotheses about language evolution.

> Depending on the domain targeted, the learning task may expose participants to a lexicon with or without a corresponding semantic component; most ALL experiments targeting phonological patterns expose learners to words but do not require them to learn any semantic mapping (although see e.g. Gupta, Best & MacMahon, 2005), by contrast when syntactic patterns are targeted the lexicon and sentences in the miniature language typically correspond to objects, actions, or events the learner is required to attend to ALL paradigms have also been adapted to use non-linguistic stimuli, such as patterned sequences of shapes or tones. Training and testing generally take place during a single, relatively short experimental session, but some ALL paradigms involve training and testing over multiple days (e.g. Hudson Kam & Newport 2009; Culbertson, 2012).

8. Theory driven approach

The chomskyan generative grammar, is a deductive approach that gives prominence to system-internal factors. Although this approach shares the idea of universals with Data-driven approach, philosophically it is a dualist approach that believes in the existence of an a priori knowledge of the language grammar within the learners. In other words, "UG is a theory which provides constraints on linguistic representation" (White, 1998). In order to explain the acquisition of the formal properties of a language, we are to assume an innate, and universal, linguistic component (McLaughlin, 1987).

According to White (2003), In L2 acquisition, learners are faced with a similar task to that of L1 acquirers, namely the need to arrive at a system accounting for L2 input. Further to her discussion, White (2003) also mentions the need of the SL acquirers to address the logical problem of language acquisition "in that there are abstract, complex and subtle properties of grammar that are underdetermined by the L2 input- the poverty of stimulus" (White, 2003).

According to Hawkins (2001), the context of SLA is different from that of First Language Acquisition (FLA). He suggests three sets of differences in these two contexts. First, in SLA, another language is already present. Second, other components of mind have already matured, whereas in FLA they are not. Third, the input is provided differently in FLA and SLA. Hawkins, in this way, concludes that the SLA course of development is different from that of FLA. However, it does not convince a mentalist to assume that the principles of UG is not at work in SLA. Hawkins refers to Corder, Dulay et al., and Selinker as pioneers in assuming a substantial role for UG in SLA even in older ages. However, in order to:

> Demonstrate convincingly that interlanguage grammars are constrained by principles of UG, the following conditions should hold:
> i. The phenomenon being investigated must be underdetermined by the L2 input. That is, it must not be something that could be acquired by observation of the L2 input, including statistical inferencing based on frequency of occurrence, on the basis of analogy, or on the basis of instruction.
> ii. The phenomenon should work differently in the L1 and the L2. That is, it must be underdetermined by the L1 grammar as well. In this way, transfer of surface properties can be ruled out as an explanation of any knowledge that L2 learners attain (White, 2003).

8.1. Interlanguage development

According to White (1998), much research has been done on the issue of the presence of UG in learners' IL. According to McLaughlin (1987), IL is the systematic and idiosyncratic grammar possessed by L2 learner that is different from learners' both L1 and target language. In line with this claim, if the UG is present, according to White (2003), L2 grammar must be constrained in the same way as L1. White (2003), further reports two researches on UG and interlanguage; reflexives (Christie and Lantolf) and null prepositions (Klein). Based on the findings of these researches, she concludes that, although there have been deviations from UG, the interlanguage

of L2 learners were not so deviant to be sanctioned by UG. Further to White's conclusions, one can refer to McLaughlin's report on meta-analysis of the research related to this topic:

> These studies have been interpreted by advocates of the UG approach as evidence that ILs reflect the principles of UG and that the types of errors that L2 learners make are constrained by Universal principles. However, it is also possible, according to UG theory, for errors in the IL to reflect channel capacity, so that apparent violations can be explained away as resulting from development, not acquisition. (p. 98)

9. Acquisition and development

" the Chomskyan position views UG as part of the brain. Consequently, learning is not the correct term to describe how language develops" (McLaughlin, 1987). Therefore, "UG present in the child's mind grows into the adult's knowledge of the language so long as certain environmental 'triggers' are provided… Language acquisition is the growth of the mental organ of language triggered by certain language experiences" (Cook, 1989). According to McLaughlin (1987), therefore, "acquisition refers to ideal language learning unaffected by maturation, processing limitations, memory restrictions, and other cognitive and motivational factors" (p. 93). By the same token, according to McLuaghlin (1987), development is the term used to refer to child language learning. Development is restricted by child's capacity to process information and other maturational factors. It can be inferred that UG theory considers the room for attainment of language. This theory considers language principles present within the learners.

9.1. Final remarks

there is much to talk about Data-driven approaches to universalism. This approach initiates the inquiries of its from the principles common to all languages, goes through a process of cross-linguistic search for the a.m. principle, and terminates in discovering a Grammar Universal (GU). In this way, it is a more systematically objective approach to the study of language. Naturally, it has been very much successful in coming up with new knowledge on language learning. Recently, an older approach has been revived that can be greatly influential in data-driven approach to understanding universals of language grammar. Artifical Langauge Learning (ALL) paradigm seems to be the appropriate tool at the service of this data-driven inquiry. One could expect new and influential findings on languages as a result of the application of this new tool.

The theory-driven approach to universalism considers the presence of UG in both L1 and L2 acquisition as constraints on the utterances and productions of the learners. The belief in UG is the natural consequence of the concept of Poverty of Stimulus; it is conspicuous that both L1 and L2 learners, regardless of their acquisitional differences, can produce more than the input they receive. This leads proponents of the UG to a logical problem that can be solved only in the Lieu of the UG. Meanwhile, the abundant research in SLA conforms to the POS concept, leading to the suggestion of constraints on the acquisitional sequences of SLA.

> Depending on the domain targeted, the learning task may expose participants to a lexicon with or without a corresponding semantic component; most ALL experiments targeting phonological patterns expose learners to words but do not require them to learn any semantic mapping (although see e.g. Gupta et al. 2005), by contrast when syntactic patterns are targeted the lexicon and sentences in the miniature language typically correspond to objects, actions, or events the learner is required to attend to ALL paradigms have also been adapted to use non-linguistic stimuli, such as patterned sequences of shapes or tones. Training and testing generally take place during a single, relatively short experimental session, but some ALL paradigms involve training and testing over multiple days (e.g. Hudson Kam & Newport, 2009; Culbertson, 2012).

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