# Learned or inscrutable assessing the cognitive basis of second language acquisiti...

Technology, Development

The argument between functionalists and those who subscribe to the Universal Grammar model falls within the great scientific tradition of " nature versus nurture." It is, perhaps, an unavoidable discursive construct, one that usefully and practically frames the debate over how second language acquisition is facilitated by the human brain. There is uniformity to language itself but the individual experience of each person who comes to understand and learn a second language may be seen as an organic and fluid phenomenon. Does the acquisition of a second language take place through the filter of personal experience, or does it fall into place by virtue of a genetically endowed trait that appears to give children a built-in advantage in acquiring their first language?

It is a matter of scientific examination and intuitive interpretation that has for thousands of years intrigued some of the world's greatest scientists and philosophers. Albert Einstein, one of the most innovative and prolific scientific theorists of all time, found this a particularly complex and elusive question. It was Einstein who may have most succinctly captured the essence of that which lies at the heart of the debate. " Can human reason without experience discover by pure thinking the properties of things?" (Cruse, 2004). In seeking an answer to Einstein's inquiry, one must address other questions that speak to the evolution of human consciousness and the development of man's ability to communicate. Does man's cognitive development proceed from learned adaptations to experience, or is it a constant, an ingrained and instinctive way of organizing the manner in which humans think and process language? Regardless of which theory one

accepts, it is certain that languages and language acquisition have particular characteristics in common.

## Universal Grammar

These commonalities encompass a broad spectrum of linguistic phenomena. These range from consideration of why, if languages have a word for the color " black," they also have a word for " white," to the intriguing " pronoun-dropping" principle, in which the habit of dropping pronouns from speech because they are assumed or inferred transcends linguistic barriers… but not all. Noam Chomsky's Universal Grammar theory seeks to explain the notion of a single innate grammar present in the acquisition of language, which he noted those acquiring a first language are able to do with relative ease. A " simple" explanation is the foundation-extension example. " A second language…is effectively an extra tacked on to the first language, like an extension to the back of a house" (Cook and Newson, 222). The " house" provides the basis for the addition, giving it form, shape, functionality and stability. The principles by which the extension is able to stand are the same that give the house definition.

So it is with second language acquisition – according to the precepts of Universal Grammar, the same principles of intuitive understanding that guide the learning of one's native language during early childhood apply in the learning of a second language. In his 1999 treatise on second language acquisition, Joseph Galasso posits that instinctive ability is very much at work. " Like (first language) acquisition, learners of the (Universal Grammar

Access) model are considered to be unaware of what they are learning (unconscious learning) and need nothing other than positive evidence (via natural input) to set the values of parameters and to instantiate principles" (Galasso, 1999). Galasso notes that researchers have used the Universal Grammar " paradigm" to explain that second language acquisition takes place in a way that is similar to first language acquisition. What is more, the second language learner has other resources that stem from the presence of Universal Grammar, namely an amassed " knowledge of one's (native) language and a powerful system of general abstract problem-solving skills" (Ibid, 1999). Even if Universal Grammar is not present in second language acquisition (as many have claimed), it may still have a profound impact based on what the learner is able to bring forward in striving to acquire a second language. Galasso explains that the learner has the ability to reconstruct or adapt much of the Universal Grammar principles not only from first language acquisition but also by comparing the two (Ibid, 1999). As such, the learner's intrinsic sense of grammar enables him to apply what he already knows.

This intrinsic quality makes it possible that anyone may acquire a second language, either by immersion and adaptation or by simply setting out to learn, though it has been shown that children accomplish this easier than adults. Cook and Newson explain that people are monolingual simply because they tend to grow up and develop linguistic abilities in single-language environments, not because they can't acquire a second language. " If you don't hear (a second language), you won't speak one; if you do, you

will" (Cook and Newson, 224). Given the prevailing evidence, they point out that the Universal Grammar hypothesis can and must be enlarged to incorporate multiple grammatical systems. In this model, anyone can become multilingual. Indeed, multilingualism appears to be more the rule than the exception given examples from civilizations worldwide. In Cameroon, for instance, 279 indigenous languages are spoken (Ibid, 224). Cook uses an extreme example to illustrate this supposition. " A priest from Tanzania spoke Kihaya as a child, learnt Kiswahili in elementary school and English in secondary school, needed Latin for his religious training (but also learnt French out of curiosity at the same time), was posted to Uganda and Kenya, where he needed Rukiga and Kikamba..." (Ibid, 224). Such examples, particularly in " underdeveloped" countries where educational opportunities are scant, support the human ability to encompass multiple linguistic structures. This " multi-competence" perspective considers a theory that proceeds from monolingualism as being far too limiting, amounting to taking a position that interprets the situation from the wrong direction.

The example of the priest from Tanzania, and many other such cases, show that the ability to construct and reconstruct language is potentially within the reach of all humans. It would also seem to undermine the proposition that adults are at a significant disadvantage when it comes to second language acquisition, or are simply unable to sufficiently master the syntactic and lexical complexities of another language. S. Felix takes the position that adults do not suffer from some erosion of cognitive functioning that precludes the acquisition of language, but that they are hampered by an

excess of learning. In other words, their cognitive skills are too well-Developed (Felix, 1981). Felix's hypothesis runs directly counter to overt examples of Universal Grammar application in second language acquisition. If Felix is correct, what becomes of the residual parametrical effect of Universal Grammar?

At its most esoteric, Chomsky's theory of Universal Grammar tells us that the human mind and its remarkable ability to give shape to the building blocks of language represents something that is beyond science. In his book Noam Chomsky and the Universal Grammar, Don Cruse says this is the sort of insubstantial, non-Empirical reasoning that frustrated Einstein, which he could neither dismiss nor concede. In claiming the existence of a Universal Grammar, Chomsky was " drawing attention to the same problem that so worried Einstein…Namely, that the human mind appears somehow to have access to a non-personal and therefore universal reality" (Cruse, 2004). Others have wrestled with the idea that human cognition and communication are part of something too big for science to fully comprehend or explain. Rudolf Steiner's phrase, " I think, yet the world also thinks in me," is a response to this Universalist view. It also gives form to the concept of an eternal " logos," which many believe is the true nature of Chomsky's Universal Grammar (Ibid, 2004).

Some claim that that which Chomsky calls Universal Grammar is actually a carry-over from earlier stages of human evolution. Steiner argues that as man gradually separated from a deeper, unselfconscious state of " oneness"

with the natural world, and with other animals, he retained a degree of some primordial means of communication, a leftover that still arises from an overpowering survival instinct (Cruse, 2004). Others insist that this is part of an eons-old evolutionary process shaped by the world that shaped man. This leads readily to a discussion of functionalism.

## Functionalism

A functionalist view is not an integrated aspect but a system that incorporates multiple theories. Put simply, those researchers who take this kind of perspective are concerned with the connection between form and function. Causality is at the root of what functional linguists attempt to understand and explain. Evolution has an important role to play from a functionalist standpoint as well, but in terms of the way language itself is continually recreated. In this perspective, language is a physical, tangible thing that gradually becomes stratified, gradually accumulating the way sediment slowly piles up in a river over many years. In Functionalism and Formalism in Linguistics, Joan L. Bybee asserts that language is not a static phenomenon. " The cognitive capacity, the goals and strategies used in real time are what shape the conventionalized structure of language... functionalism recognizes that language changes over time, that there is no stasis but rather a continual recreation of grammar" (Darnell, 214). Change is integral to language, the trait that makes it inherently dynamic.

In one sense, function refers specifically to the conditions that lead to one type of language being used over others, or to how specific linguistic forms

come together in the mind of the learner. In one notable series of experiments conducted in Sweden, researchers determined over a period of two decades that second language acquisition could be considered an incremental process, a gradual building of " computational mechanisms" required for the second language to be processed (Pienemann, 206). This appears to have had far more to do with the frequency of certain grammatical forms the subjects were able to discern and identify over time than with the idea of an innate universal grammar. Bybee says the construction of second language learning is a product of the accumulation of data acquired over many years. The components of language are " stored like other precepts that come from our experience – detail is not factored out and the association between sound, meaning and context is direct, not filtered through intervening layers of structure" (Darnell, 236). Grammar and other parts of speech are not segregated but work in concert in the acquisition of language.

The interplay of grammar, lexicons and phonologies make up the functionalist study of language and language acquisition, and that these aspects each have a specific linguistic function. Among the simplest examples is the Competitive Model, which describes the function that occurs when identification is made between the sound of a word and its concept, represented by the visual, or written, form. This cognitive organization is key to the idea of functionalism. An example of this is the word cat, which is phonologically represented by the phonological kAt. The cognitive connection made between this mono-syllabic expression and the concept of

a small, four-legged animal with whiskers " involves the connection of one set of nodes to another" (DeGroot and Kroll, 115). This recognition/identification of concepts is the product of a cumulative acquisition of experience and knowledge, an adaptive action driven by need. It allows an individual acquiring a second language to interpret meaning based on the interrelationship between words and phrases (such as the correlation between adjectives and nouns).

Experience and adaptation may also cause particular words, or groups of words, to acquire idiosyncrasies that set them apart from linguistic rules and from traditional use. Such schemas determine patterns of usage based on tradition, experience and the minutiae of human physical and linguistic interactions. This tendency has been studied in many locales and various areas of linguistic influence. In Spain, an experiment revealed that some speakers chose to use an irregular pattern of stress assignment rather than adhere to the general rule. In Spanish, the vast majority of nouns that end in consonants take ultimate stress, while those ending in vowels are pronounced with stress on the penultimate syllable. Yet the study showed that a vast majority of speakers read words ending in –en with penultimate stress, in contravention of the general rule. Yet all other words preceding the final –n with a different vowel were read with stress on the last syllable (Aske, 1990). The Spanish study reflects the tendency of a group of words to evolve its own schema and function outside normal rules.

Bybee cites the previous example to show that language usage directly impacts grammar and lexicon (Darnell, 236). His expansion of this thesis is that phonetic and lexical variations provide a subtle example of functionalism. He states that functionalism can help explain the relation between " phonetic naturalness or motivation and phonological regularities in a language" (Ibid, 236). What is more, Darnell states that the difference between phonetic processes and their motivation speak to the process by which man's ability to communicate and his capacity for utilizing experience in adapting that ability to external stimuli have evolved over time. Functionalist approaches to the study of phonetic commonalities and the ways in which these conventions are altered over time have much to say about the study and acquisition of a second language since phonetic anomalies and irregularities must be mastered by children acquiring a first language. The similarities in the way first and second language learners assess and process these irregularities as they cognitively organize grammar provide a fertile area of research for functionalist linguists.

Environment or, more specifically, the linguistic environment in which learners acquire a language has been accounted a functional factor in the way learners acquire a language. This is particularly germane when a learner encounters grammatical and phonological irregularities as they process and organize a particular linguistic system. In studying how children learn a creole tongue, Carla Hudson-Kam and Elissa Newport found that children retain only frequently occurring features and tended to dismiss infrequent irregularities. Kam and Newport's conclusion was that learners organize the

prevalent language in their environment based on how often they hear recurring features (Kam and Newport, 2009). Thus, environment is an external factor impacting the process of language acquisition, though the use of the term " environment" here refers to a setting in which grammatical/phonological/syntactical particularities stand in counterpoint to linguistic conventions.

For second language learners, this study examined the impact of probabilistic usage, another unpredictability factor. From a practical standpoint, probabilistic grammar can confront the learner with speakers who may use incorrect forms of the same word or expression in the same sentence. Consequently, the probability that the adult learner will adopt incorrect forms is high. Kam and Newport found that adult learners also tend to follow what they hear in the way they organize a new language. They cited the example of a learner of German who used the indefinite article eine exclusively, despite the fact that other forms of the indefinite article are used depending on the gender of the noun it precedes (Kam and Newport, 2009). This type of language regulation among adults was found to be frequency-based, as it was with children. The effect of frequently encountered processes and grammatical forms in a given language environment was found by Kam and Newport to be at work in second language acquisition.

Linguistic researchers have applied many theories that come under the functional approach to second language acquisition and examined

Chomsky's Universal Grammar theory from linguistic and philosophic angles. Linguists, some of them cited in this paper, believe that elements of both approaches help advance the study of second language acquisition, despite the fact that the two proceed from vastly different philosophical foundations. The " innate knowledge" hypothesis that Chomsky developed seeks to explain what Einstein believed may be ultimately unknowable. Conversely, functionalism's multi-disciplinary approach asserts that the ability to learn a second language is affected by the learner's experience, environmental influences and other factors and, as such, can be seen through the prism of cause-and-effect. The comparative paucity of empirical data/information in the generative approach has drawn criticism from linguists who point to a relative lack of causation in the Universal Grammar theory. Since scientific knowledge is, in general, acquired through the compilation and extrapolation of data from experimentation, functionalist hypotheses has been considered by some more reliable than Chomsky's proposition and its variants, though these offer compelling and influential arguments in an area of inquiry that may simply defy an empirical explanation.

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