

Relational vs. ecological functionalism: Which one serves SLA better?

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Abstract: During 1980s there was a debate between formalists and functionalists concerning the issue of language acquisition. The former dealing with issues of learnability and a hypothesized 'mental organ of language', and the latter focusing upon the significance of social interaction and general cognitive principles in the acquisition process. The proponents of the formal approaches to language acquisition are called *adaptationists* as they believe that language learners are equipped with general principles of grammar in advance and their task as language learners is to adapt these principles to fit the data he/she is exposed to. On the other hand, the advocates of functionalist perspective are called *constructionists* as they hold that learning a language entails constructing a grammar during the process of language learning. There are two main senses of the term functional. At the most basic level, functional work is concerned with possible mapping relations between linguistic form and semantic or pragmatic functions. This descriptive orientation is called *relational functionalism*. There is an alternative approach to relational functionalism called *ecological functionalism*. It is concerned with providing explanations about language which show that recurring patterns of relational mappings or the historical or developmental changes in a grammar are due to general constraints on possible grammars which arise from the naturally occurring circumstances of human discourse interaction and the cognitive processes associated with them. Such explanations argue that systemic changes (historical or developmental) are associated with making discourse easier to comprehend or with grammaticalizing certain functional principles in order to automate production efforts. The current paper delves into the intricacies of this new approach to functionalism and offers that it can be a legitimate alternative to relational functionalism.

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1. Introduction

During 1980s there was a debate between formalists and functionalists concerning the issue of language acquisition. The former dealing with issues of learnability and a hypothesized 'mental organ of language', and the latter focusing upon the significance of social interaction and general cognitive principles in the acquisition process (Van Lin, 1991, p. 7).

Functionalists view language primarily in terms of its use in the context of situations, focusing on meaning conveyed in different situations. In functional studies of second language acquisition, researchers are concerned with the ways in which second language learners set about making meaning, and achieving their personal communicative goals (Mitchell & Myles, 2004). Put differently, in this view, language learning evolves out of learning how to carry on a conversation and syntactic constructions develop out of conversations. Unlike Chomsky and his associates who constrained their inquiries to questions of knowledge representations of syntax and how they assist and constrain first language acquisition, functionalists targeted the questions of how language

implementation, or use, might constrain either knowledge representation for syntax or acquisition itself (Tomlin, 1990, p. 156).

The general assumption underlying functionalist approach is that all aspects of language, including acquisition, are motivated by communicative need. Consequently, priority is given to the communicative and social aspects of language as the basis of descriptions and explanations of linguistic structure and development. Functionalism, unlike formalism, takes an external focus on language learning. It considers language primarily as a system of communication rather than a set of rules (Saville-Troike, 2006, p. 52). It is a theory which is concerned with the purposive use of language in real situations (Lust, 2006, p. 287). Functional approaches depart from the purely formal approaches to syntactic theory and view language as a means to communicate. Functionalists believe that meaning and function influence both language structure and language acquisition (Van patten & Benati, 2010, pp. 88 & 89). From a functionalist perspective language knowledge is "something that develops in the course of learning how to perform the primary communicative tasks of

comprehension and production” (Seidenberg & MacDonald, 1999, cited in Jordan, 2004, p. 244). Ellis (2008) states that functionalist view of L2 knowledge “is concerned not just with how linguistic knowledge is represented in the mind of the learner, but also with how this knowledge is used in discourse” (p. 415). Functionalists hold that “syntax cannot be considered separately from semantics and pragmatics” (Ellis, 2008, p. 415).

The term functionalism can be traced back to the distinction between ‘form’ and ‘function’ in language, where form refers to the grammatical properties and function refers to the role these play in communication (Ingram, 1989, p. 303). “Formalist research has been informed by generative linguistic theory, primarily by Government and Binding Theory and Lexical-Functional Grammar... [however, Functionalism research has not been inspired by any particular functionalist linguistic theory but rather by a strong commitment to the view that meaning, use, communicative intentions and interactions are crucial to understanding language development” (Van Lin, 1991, pp. 7 & 8). Functional approaches are different from generative/formal approaches in that they look at language development from a very different point of view, that of meaning creation. For functionalist researchers the idea of the underlying linguistic competence is not necessarily an issue. They are focused primarily and almost exclusively on performance and actually have very little to say about what the underlying linguistic system might be. In general, researchers in two functionalist/pragmatic approach as a second language learning seek to determine how learners endeavor to express meaning through the use of specific forms. This is necessarily determined in the context of actually producing language. Also, due to the focus of the functionalist approaches, research is almost exclusively conducted on naturalistic learners as opposed to those stuck in a classroom or lured to a laboratory (Mitchell & Myles, 2004). In a functionalist model, according to Ellis (2008, p. 415), “learning a language is seen as a process of mastering a number of fundamental functions of language... and the linguistic means for conveying them. Thus, from this perspective, L2 knowledge is comprised of a network of form-function mappings. Initially the network is a relatively simple one but it gradually complexifies as the learner acquires new L2 forms, matches these to existing functions and uses them to realize new functions.

This functional view of interlanguage development is closely associated with the work of Klein and Perdue. According to Klein (1991, cited in Ellis, 2008, p. 415) language acquisition is functionally driven:

It is... functions... which drive the learner to break down parts of the input and to organize them into small subsystems, which are reorganized whenever a new piece from the flood of input is added, until eventually the target system is reached (or more or less approximated).

The proponents of the formal approaches to language acquisition are called *adaptationists* as they believe that language learners are equipped with general principles of grammar in advance and their task as language learners is to adapt these principles to fit the data he/she is exposed to. On the other hand, the advocates of functionalist perspective are called *constructionists* as they hold that learning a language entails constructing a grammar during the process of language learning. They believe that what language learners acquire are rules and principles which relate forms and functions, functions which may be semantic, pragmatic or social and forms of behavior which may be linguistic and non-linguistic (Van Valin, 1991, pp. 8 & 9). From the above argument it can be concluded that virtually all of the work on language acquisition from a functionalist perspective is constructionist rather than adaptationist.

Ellis (2003) defines a construction as “a conventional linguistic unit” which is part of the linguistic system. It is accepted as a convention in the speech community, and entrenched as grammatical knowledge in the speaker’s mind (p. 66). Constructions are symbolic. Unlike both the traditional grammar and the generative grammar, “morphology”, “syntax” and “lexicon” are uniformly represented in a construction grammar. “In addition to specifying the properties of an utterance’s defining morphological, syntactic, and lexical form, a construction also specifies the semantic, pragmatic, and/or discourse functions that are associated with it. Constructions form a structured inventory of speaker’s knowledge of the conventions of their language (Langacker, 1987, cited in Ellis, 2003, p. 66), usually described by construction grammarians in terms of a semantic network, where schematic constructions can be abstracted over the less schematic ones which are inferred inductively by the speaker in acquisition. In sum we can say that constructions are independently represented units in speaker’s mind and functionalist approaches to SLA try hard to discover how these constructions are constructed in the course of real communication.

2. The central goals and tenets of functional linguistics

The questions examined in functional analysis of language are questions of the implementation of linguistic knowledge; that is, how language is used in interactive discourse. Functional approaches examine

the conditions which cause the selection in real-time discourse production of one or the other alternative. Those conditions, sometimes articulated as discourse or text conditions and sometimes as cognitive or even social conditions, represent an essential component of the overall knowledge of the language by the native speaker. They also represent part of the targeted competence in L2 for the second language learner (Tomlin, 1990, p. 159).

From a functionalist perspective, the purpose of language is communication and the purpose of grammars is to manage communication. Virtually all functional approaches consider an individual grammar to be composed of three interrelated parts. There is (a) a syntactic component, composed of syntactic forms and relations from which sentences are composed in interaction with (b) a set of semantic and pragmatic functions, including semantic relations and basic information statuses (old-new, topic-comment, etc.) that arguments may assume during discourse production and comprehension. Finally, there must be (c) rules of some kind which specify for a given language the details of how semantic and pragmatic functions are mapped into syntactic forms (Tomlin, 1990, p. 160).

Perhaps the one assumption about knowledge representations in the grammar which distinguishes FAs from other approaches is the assumption that syntax is not autonomous from semantics or pragmatics. The rejection of autonomy derives from the observation that the use of particular grammatical forms is strongly linked, even deterministically linked, to the presence of particular semantic and pragmatic functions during the discourse (Tomlin, 1990, p. 161). Functional grammar is said to be a “performance grammar” rather than a “competence grammar”. It is commonly believed that functionalist attempt to construct a performance grammar – a unified theory of the pragmatic, semantic and perceptual processing strategies that adults and children use to comprehend and produce sentences inside and outside of the discourse context (Bates & McWhinny, 1981, p. 190).

In her 1977 keynote address to the Stanford Child Language Forum, Susan Ervin-Tripp stated that: *we never did solve the problem of how grammar is acquired*. Although studies of meaning and function are valuable in their own right, they need to be taken one step further, to an understanding of how semantic and pragmatic factors influence the discovery and use of grammatical forms. Bates & MacWhinny (1981, p. 192) believed that one way to meet this goal is through the construction of a performance grammar. As performance grammar is mostly understood to be opposite to a grammar of competence, some clarification is needed on what “performance grammar” means, and how it relates to a traditional

distinction in psycholinguistics between *competence* (the native speaker’s abstract knowledge of the rules of his language) and *performance* (actual language use in speaking, understanding, making judgments, etc.). A performance grammar lies somewhere in between these two poles, involving a description of the native speaker’s *competence to perform*. In principle, any linguistic theory could be chosen as the basis for a performance grammar. Within linguistics, there is a variety of proposals available that are particularly compatible with the goal of studying semantic and pragmatic effects on grammar. Although these theories vary considerably in detail, they all share one common assumption: *the surface conventions of natural languages are created, governed, constrained, acquired, and used in the service of communicative functions*. These relationships between form and function may be complex and often opaque, involving interactions of many different pragmatic, semantic, and perceptual or mnemonic factors. Nevertheless, there is a kind of faith that language forms can and should be explained in terms of functional pressures. For this reason, these linguistic theories collectively can be called *functionalist grammar*.

Because functionalist grammars make reference to such psychologically motivated categories as “topic,” “animacy,” and “point of view,” a functionalist theory of competence may not differ greatly from a psychological theory of performance. For some theorists, the separate concepts of competence and performance converge completely within a single theory of *competence to perform*, as illustrated in the following quote from Lakoff and Thompson (1977, cited in Bates and MacWhinny, 1981, p. 192):

We believe that there is a direct and intimate relation between grammars and mechanisms for production and recognition. In fact, we suggest that GRAMMARS ARE JUST COLLECTIONS OF STRATEGIES FOR UNDERSTANDING AND PRODUCING SENTENCES. From this point of view, abstract grammars do not have any separate mental reality; they are just convenient fictions for representing certain processing strategies.

Whether or not this strong position is embraced, it is still clear that processing strategies (and hence performance) must play an important role in any theory of grammar where linguistic forms are explained in terms of the communicative work they do. Functional theories, in which linguistic forms are mapped directly onto meanings and functions, have a more immediate appeal to psychologists because they seem to follow our intuitions about how we formulate thoughts into utterances.

3. Relational Vs. Ecological Functionalism

3.1. Relational Functionalism

It is important to point out that one serious source of confusion regarding functional efforts stems from two main senses of the term functional. At the most basic level, functional work is concerned with possible mapping relations between linguistic form and semantic or pragmatic functions. So, for example, one can identify what is coded by a particular syntactic structure or morpheme. Or, one can identify how a particular semantic or pragmatic function is coded within a particular language or speech community. This descriptive orientation, which is called *relational functionalism*, selects individual languages or speech communities as the target of its efforts, and requires in principle an exhaustive and exception-free account of the linguistic behavior examined (Tomlin, 1990). As can be seen, relational functionalism is all about mapping and in SLA the map is between form and potential meaning called function. In other words, meaning-making efforts on the part of learners are a driving force in an ongoing second language development, which interact with the development of formal grammatical systems (Mitchell & Myles, 2004). The shift from a product to a process orientation in the analysis of interlanguage has led researchers in the field to look at how learners map form-function relationships (McLaughlin, 1987). There have been two lines of studies to analyze the relationship between form and function in the acquisition of L2. Some claimed that learners begin with forms and some claimed that learner begin with functions (Mitchell & Myles, 2004). However, it seems that both form-to-function and function-to-form analyses are needed to understand the process of second-language acquisition. "That is, researchers need to look at how forms are mapped onto functions, and how functions are mapped onto forms" (McLaughlin, 1987, p. 74).

3.1.1. What is form-to-function analysis?

The basic underlying idea in the form-to-function analysis is that language is principally made up of connections between the particular forms of the language and their functions, i.e. how these forms are used to express particular meanings. This is a very different viewpoint than we find in UG or even some of the UG supporting cognitive/processing models. These models have looked at forms separate from functions or actual use. Form-to-function analysis is all about the process of how learners go about mapping/associating these two aspects of language together. There is no computational system which does this or helps it to develop. Form-to-function mappings are built on the basis of input and output. Researchers in this area argue that this is the basis of our language ability and therefore, makes up the

central question of language acquisition (Mitchell & Myles, 2004; Saville-Troike, 2006; Tomlin, 1990).

Depending on the researcher, these two aspects can be seen as being separate or integrated. In the integrated view, form-to-function mapping is the entire linguistic system. This might seem overly simplistic but once we realize that the mappings between form to function are many too many (one form will have many functions and one function will have many forms) then it becomes a system which is sophisticated enough to actually describe how language might work. It should be noted that it is on the basis of form-to-function mapping that functionalist and pragmatic approaches to second language acquisition actually meet. Both rely on the same basic form-to-function mapping system but they focus on different levels of forms and functions.

One of the great beauties of a form- to-function mapping system is that it is simple but extremely powerful. It is powerful enough to actually become a basic model for where language comes from, provided we are ready to accept the idea of a connectionist model for language processing and organization. The form-to-function analysis states that forms (particular lexical items/units) will develop (be used by learners) before they actually know how to use them in any way resembling native speaker patterns of usage at least in FLA. There are arguments about the directionality of the system in SLA (form→function, or visa-versa) and the reality of the situation is that individuals will probably map in both directions at different times depending on their learning situation as well as their background knowledge, including knowledge from pre-existing linguistic systems. Thus, somebody learning a language very similar to their first language will probably be able to use the forms of their first language initially to help decide what some of the functions are and vice versa. For someone dealing with a new language quite different from their native language they might actually need to rely on functionability before forms, but this depends on whether their learning is naturalistic or classroom based. Naturalistic is functional, while classroom based learning is almost wholly form-based (Mitchell & Myles, 2004; Saville-Troike, 2006).

3.1.2. What is function-to-form analysis?

Some researchers have argued that second-language data shows evidence of the acquisition of function without the acquisition of form (McLaughlin, 1987). Hatch (cited in McLaughlin, 1987), for example, has argued that language learning evolves out of learning how to carry on a conversation and that syntactic constructions develop out of conversations. Rather than assuming that the learner first learns a form and then uses that form in discourse, Hatch assumed that the learner first learns how to do

conversation, how to interact verbally, and out of this interaction, syntactic forms develop. The argument is made that conversation precedes syntax, or “syntax emerges from pragmatics” (Ninio, 2001, p. 433). Specifically, in building a conversation with an adult and later with his peer (vertical construction), the child establishes the prototypes for later syntactic development (horizontal construction) (McLaughlin, 1987). Ellis (2008) also “functionalist researches, such as Purdue and Klein also emphasize the importance of discourse-contextual constraints on linguistic representation and language development” (p. 416).

To do conversation, the child has to learn to call the partner's attention to very concrete objects or actions. Once a child nominates a topic, the partner has a limited number of possible replies. Hatch (cited in McLaughlin, 1987) gave the example of the child pointing to a fish in a fish tank. The adult conversational partner could say: “What's this? It's a fish; Where's the fish?; Whose fish is that?; Is that yours?; How many fish are there?; What color is the fish?; What's the fish doing? He's swimming; Can he swim? No, it's not a fish” (pp. 75-76). By questioning and responding in this way, the adult is prompting the use of specific syntactic constructions by the child.

It seems the process is the same in first and second-language learning. When a teacher asks a question or speaks in the target language, he or she is in essence asking or speaking about constituents to be filled in slots. By filling in these grammatical slots, the learner gets practice in applying the rules of the language. Hatch's argument is that the learner's initial need is to interact through language, and that by learning how to interact in conversation first- and second language learners acquire vertical then horizontal (syntactic constructions).

3.2. An alternative approach: Ecological functionalism

There is an alternative approach to functionalism called *ecological functionalism*. It is currently on a more speculative level and it is concerned with providing explanations about language which show that recurring patterns of relational mappings or the historical or developmental changes in a grammar are due to general constraints on possible grammars which arise from the naturally occurring circumstances of human discourse interaction and the cognitive processes associated with them. Such explanations argue that systemic changes (historical or developmental) are associated with making discourse easier to comprehend or with grammaticalizing certain functional principles in order to automate production efforts. Unlike Relational Functionalism which is description-oriented, Ecological Functionalism is explanatory; that is, ecological functionalism “sees the development of the linguistic system as a matter of

achieving and sustaining stability and reliability in the general communicative setting. Ecological functionalism targets languages as its objects of investigation, and its principles, like the general principles of GB, need not be manifested directly in the linguistic behavior of individual languages or speakers” (Tomlin, 1990, p. 160).

Dent (1990) argued for this new functionalist approach to language development. A realist orientation that locates the causes of language development neither in the learner nor in the language environment but in functioning of perceptual systems that detect language-world relationships and use them to guide attention and action which in turn leads to detecting new relationships. From an ecological perspective, organisms and their environments define and shape each other; an environment cannot exist without an organism and vice versa. Organisms always have a developmental history of interacting with their environment, and that history has shaped their abilities. A realist/ecological approach to language is based upon direct perception of the natural environment, both physical and social. Most current theories of language and language development presuppose that perception of the world is indirect, that is, that some sort of mental representation, inference process, etc., is used in perceiving and knowing the world.

However, the thesis in ecological functionalism is that if perception is direct, then language theories must be radically changed. There does not exist a well-established theory of language development that assumes direct perception. However, extending Millikan's (1984) realist theory of language in philosophy to psychological studies of the emergence of language skills is a useful starting point. Millikan explicitly seeks to provide an account of how language corresponds to the world; this correspondence allows us to use language to adapt and function (Dent, 1990, pp. 681 & 682).

Traditional functionalist approaches to the emergence of language propose that language forms are acquired because they function to communicate. For example, word order is used because it helps communicate pragmatic information such as agency, topic, perspective, or salience. Millikan (1984, cited in Dent, 1990) makes broader claims; language devices exist because they have helped humans adapt and survive, and only the devices that do so actually stay in use. In order for language devices to function adaptively they must correspond to important invariants in the environments of speakers and hearers.

On this view, the usual function of language is to serve as a medium for focusing one's knowledge of the world and projecting that knowledge for others. Understanding what another says is making use of an

instrument in order to perceive. The realist approach to language proposes that the relation of sign (word, sentence, phrase) and what it stands for is real and, therefore, detectable. A central tenet of the theory is that representations are signs, the referents “of which are supposed to be identified by the cooperating interpreter” (Millikan, 1984, p. 96, cited in Dent, 1990, p. 682). A key idea in Millikan’s (1984) system is that of proper function. A structure is performing its proper function when it is acting as it should ideally; for example, a proper function of the eyeblink reflex is to keep foreign matter out of the eye. Proper functioning of structures leads to continuance of life for organisms; when a structure is functioning properly it is functioning as it is supposed to. Representations “function properly when an interpreter identifies or recognizes what their references are” (p. 71).

On this view learners develop the abilities to understand and use language by perceiving the invariant relations of language devices and the aspects of the world the devices correspond to. Thus, language development/acquisition involves an essentially perceptual task, where perception is the direct pickup of structure in the ambient surround (visual and auditory).

The idea of a proper function for language devices refers to the biological purpose of the devices, not the organism’s purpose (or goals or intentions). Thus this meaning of function makes no reference to internal mental states in describing the function of language. Such an approach requires speculation about the evolutionary history of the structure in question but no speculation about mental states. Language devices, that is, words, surface syntactic forms, tonal inflections, or any other significant surface element of either spoken or written language function because the speaker structures what is said, thus forming a real connection between sign and object. Speech is structured in response to the world and hearers can detect this structure. The relationship of language and world is not a natural law; speakers and hearers have to learn the relationship.

A realist theory is important for researchers of language acquisition because it focuses our attention on how language is connected to the world and how language is thereby learnable. An ecological approach to linguistic representation, as opposed to a formal or cognitive approach, investigates perception of the actual, non-mental signs that are present and observable in the environment rather than unobservable concepts (as traditionally defined) or mental representations (Schmidt & Dent, 1986, cited in Dent 1990, p. 684). A realist theory is important for researchers of language acquisition because it focuses

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An ecological approach assumes that linguistic representation in natural language has its source and existence in the interaction of language users with each other and with their environment. On this view, representation is not purely a formal relation divorced from language users and the world in which they live, nor does representation consist of the psychological states of language users.

One approach to syntax which fits with an ecological approach to language stresses the *iconicity of syntax*. The iconicity approach takes as basic the ideas that many linguistic universals are *tendencies* rather than *absolutes*, such universals may be explained, and formalist is not explanation. Studies from this perspective focus on syntactic structures as similar to diagrams in that they bear a similarity to the thoughts or perceptions they are used to express. In this sense, syntactic forms are icons of thoughts about or perceptions of the world. Syntactic forms are also causally related, in a speaker’s experience, with the thoughts or perceptions they are used to express, and thus are indexical of those thoughts or perceptions. To clarify, a common example of an index is the track an animal sometimes leaves; it is a sign of the animal’s walk because it was caused by the animal’s walk. The analogy with sentences is that just as an animal walking sometimes results in tracks, perceiving sometimes results in sentences that correspond to what the perceiver detected about the world (Dent, 1990, p. 687).

Findings many psychological studies of syntax (Lempert, 1989; Greenfield, Nelson, & Saltzman, 1972; Greenfield, 1975; Osgood, 1971; Greenfield & Dent, 1982) are consistent with ecological approaches to language because they show that language expresses an understanding of the perceived world. The common ground between traditional functional approaches to language and ecological approaches is the assumption that language use is adapted to the immediate environment (social or physical) and that language functions to aid people in adapting to their environments. It follows that language must have an actual connection or correspondence to a real world in order to function.

4. Concluding Remarks

FAs remain central to SLA research. This centrality derives from two considerations: First, success and failure in second language acquisition does not depend as much on what universal knowledge is available to the learner as it does on the social discourse interactions in which the new language is encountered. The description of the linguistic, cognitive and social aspects of those

interactions falls within the scope of effort traditionally identified as functional. Thus, a concern for learning as a matter of use will drive SLA research inevitably to consider which aspects of use and the processes associated with it fall within the grammar or merely assist in developing it.

Second, there are kinds of linguistic behavior which can be examined in no way other than a functional perspective, if one is either to predict how native speakers behave or what it is that learners must master.

The core claim of an ecological approach is that mind, body, and world function integratively in second language acquisition (SLA). This does not mean that we can never speak of cognition per se when discussing SLA, but it does mean that cognition per se is a fiction. This claim, which may trouble SLA researchers, is based on the following reasoning.

Like all organisms, human beings are *ecological* organisms—they depend on their environment to survive. For this same reason, humans are *adaptive* organisms – they survive by continuously and dynamically adapting to their environment. Cognition plays a central role in this endeavor by promoting intelligent, adaptive action-in-the-world, and to do so it must be intimately aligned with its environment. Put differently, cognition is a node in an ecological network comprising mind-body-world – it is part of a *relationship*. This view contrasts sharply with the dominant understanding of cognition as “mind-in-a-vat” or “lonely cognition,” i.e., *cognition per se*.

An ecological approach has striking implications in several areas. The first is learning. Instead of viewing learning as a complicated activity – as occurring mostly in exotic locations (e.g., classrooms), at the command of special people (e.g., teachers), for hazy, abstract purposes (e.g., education) – it sees learning as a default state of human affairs. If we constantly and sensitively adapt to our environments, then learning is continuous, at least insofar as durable adaptive change occurs in the learner-world system. Recent developments in cognitive science, neuroscience, anthropology, and biology support this view by re-envisioning cognition as an *open* system – as continuously and dynamically adapting to worldly conditions.

A second implication of an ecological approach is that cognition is extended and distributed – it projects out into the world, often via the multitude of adaptive tools invented by humans.

Finally, an ecological perspective has striking implications for SLA. It views SLA, like other forms of learning, as a natural, adaptive process of ecological alignment. This is hardly to deny that cognition is crucial in SLA, but cognitivist views ignore the profound embeddedness of language learning in the

world. From this perspective, the best way to promote SLA is to place learners in situations where the L2 is necessary for social action – where they need it to survive and prosper. Such learning will often, if not always, take place within *situated activity systems*.

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