

Nativist Emergentism in Second Language Acquisition

¹Mohammad Khatib, ²Kamran Mehrgan

¹Allameh Tabataba'i University, Tehran, Iran

^{*2} Department of TEFL, Masjed Soleiman Branch, Islamic Azad University, Masjed Soleiman, Iran

Corresponding author: kamranmehrgan@yahoo.com

Abstract—Second language acquisition has been spotlighted from different ideological perspectives and much has been stated and criticized in this regard. Emergentism is one of these perspectives which has received much attention in the realm of second language acquisition. Emergentists, O'Gradian and empiricist, do not contend that there is some pre-determined mental capacity as the nativists such as Chomsky believe. This paper makes attempts to scrutinize the critical views of both perspectives of emergentism and argue for the O'Gradian ideology concerning second language acquisition.

Keywords—Emergentism; O'Gradian Emergentism; Empiricist Emergentism; Second Language Acquisition.

1. Introduction

In recent years, much of the opposition to the Universal Grammar program has coalesced around a set of ideas that have come to be grouped together under the rubric of emergentism. Emergentism is the name which has been given to a general approach to cognition that stresses the interaction between organism and environment and that denies the existence of pre-determined, domain-specific faculties or capacities. Emergentism, thus, offers itself as an alternative to modular, special nativist theories of the mind, such as theories of Universal Grammar (UG). In language acquisition, emergentists allege that simple learning mechanisms are sufficient to cause the emergence of complex language representations [11]. Emergentists unanimously reject Chomsky's UG. However, they have different views to language acquisition. There are two subdivisions in emergentist ideology: nativist emergentism which is supported by O'Grady and empiricist emergentism underpinned by people like Ellis. It is worth mentioning that those following empiricist emergentism radically refute human innate properties or even the existence of the mind.

In second language acquisition (SLA) specifically, empiricist emergentism has been supported by Ellis ([4][5][6][7][8]). Both O'Gradian nativist emergentism and empiricist emergentism explicitly oppose the nativist views of language that refer to something like UG and in fact do not believe in Chomsky's notion of inborn grammatical knowledge. This latter form of nativism is sometimes

referred to as special nativism [11]. Emergentism does not oppose nativism and the fact that the brain is innately structured in various ways is not the point of dispute. There is, however, some opposition to representational nativism which holds that there is direct innate structuring of particular grammatical principles and constraints [9]. This paper makes attempts to reflect the tenets of nativist emergentism and is much inclined to what O'Grady holds concerning this perspective.

2. The Philosophy of Emergentism

The genesis of emergentism can be traced to the work of Mill [14] who proposed that "a system can have properties that amount to more than the sum of its parts" (p. 243). The world is replete with many instances depicting this view. For example, the chemical combination of two substances produces a third substance along with the properties which are different from those of either of the two substances separately, or both of them taken together. Not a trace of the properties of hydrogen or oxygen is observable in those of their compound, water [20]. According to Richards and Schmidt [21], emergentism refers to "the view that higher forms of cognition emerge from the interaction between simpler forms of cognition and the architecture of the human brain. For example, in language acquisition, it has been proposed that categories such as the parts of speech are not innate but emerge as a result of the processing of input by the perceptual systems" (p. 177).

The earliest emergentist work focused on the problem of how children acquire a language in response to the sorts of experience typical of childhood. More recently, there has been growing interest in the relevance of emergentism to understanding second language acquisition as well. Grounded upon the emergentist view, language development is not an accumulation of objects, but a process of transformation, growth, and reorganization. To better appreciate the concept of transformation, it should be stated that Vygotsky [27] emphasized the notion of transformation; that is, new levels of learning cannot be directly derived from existing levels, and this is an emergentist view of learning. MacWhinney [13] confirms the notion of transformation, and provide strong evidence supporting Vygotsky's observations. Elsewhere on emergentism, Vygotsky [27] stated that "throughout the child's development, new systems constantly emerge within which perception acts. Within these systems and only within these systems, perception acquires new characteristics that are not inherent to it outside that developmental system" (p. 300). Parallel with these ideas, it should be pointed out that the emergentist view to language learning considers the issue as a complex and dynamic process in which various components emerge at various levels, to various degrees, and at various times. This, in fact, reveals the chaotic aspect of second language acquisition.

3. Language from an Emergentist View

It is stated that emergentism is a further development of connectionist models of language acquisition. However, it is alleged that emergentism takes a behavioral stance [2]. This perspective illuminated by Ellis [8] appeared with such a contention that "the complexity of language emerges from relatively simple developmental process being exposed to a massive and complex environment. The interactions that constitute language are associations, billions of connections, which co-exist within a neural system as organisms co-exist within an eco-system. And systematicities emerge as a result of their interactions and mutual constraints" (p. 63).

Language is like the majority of complex systems which exist in nature and which empirically exhibit hierarchical structure [23]. In this regard, emergentists believe that the complexity of language emerges from relatively simple developmental processes being exposed to a massive and complex environment. Thus emergentists substitute a process description for a state description, study development rather than the final state, and focus on the language acquisition process (LAP) rather than language acquisition device (LAD) [4]. This view is strictly against that of the nativists and radically refutes the existence of any inborn grammatical system. In actuality, it rejects universal grammar proposed by the nativists [18].

To illuminate more the LAP, Mitchell and Myles [16] acknowledge that constructivist or emergentist views of language learning share a usage-based view of language

development, which is driven by communicative needs and they reject the need to postulate an innate, language specific, acquisition device. Ellis [8] states that "they emphasize the linguistic sign as a set of mappings between phonological forms and conceptual meanings or communicative intentions" (p. 63). Based on this view, Mitchell and Myles [16] conclude that learning is deemed the analysis of patterns in the language input, and language development results from the billions of associations which are made during language use, and which lead to regular patterns that may appear rule-like, but in reality they are merely associations.

Although it is widely agreed that emergentist approaches to language necessarily stand in opposition to theories of the language faculty that posit an innate UG, other tenets of linguistic emergentism are less well defined and there is no consensus within the field as to how precisely the standard problems of linguistic analysis should be confronted. Nonetheless, the starting point for a substantial portion of emergentist work seems to involve a commitment to the following thesis [20].

Concerning linguistic emergentism Bates and MacWhinney [1] say that "language is a new machine built out of old parts" (p. 147). While there is no general agreement concerning just what those parts might be, the list is relatively short, ranging from features of physiology and perception, to processing and working memory, to pragmatics and social interaction, to properties of the input and of the learning mechanisms [20].

O'Grady [20] points out that linguistic emergentism refutes the existence of certain types of grammatical principles, but it does not mean that the existence of grammatical properties is denied. Elsewhere, he refers to the fact that the properties of grammatical phenomena arise from the interaction of factors that are not linguistic. This contention sharply disagrees with the Chomsky's notion of UG taking much heed of grammatical principles. Thus, emergentist approaches to language stand in opposition to the theories of language faculty that posit an innate UG. In this regard, to better appreciate the linchpins of nativist emergentism, let me elaborate on it in this way. Emergentists' ([19], [20]) work seems to involve a commitment to the following thesis:

1. According to Bates and MacWhinney [1], "language is a new machine built out of old parts" (p. 147). While there is no general agreement concerning just what those parts might be, the list is relatively short, ranging from features of physiology and perception, to processing and working memory, to pragmatics and social interaction, to properties of the input and of the learning mechanisms [20].

2. A significant amount of emergentist work within linguistics adopts the techniques of connectionism, an approach to the study of the mind that seeks to model

learning and cognition in terms of networks of neuron-like units. In line with emergentism, in its more extreme forms, connectionism rejects the existence of the sorts of symbolic representations (including syntactic structure) that have played a central role in explanatory work on human language [20].

3. It is alleged that emergentism takes a behavioral stance [2]. This perspective illuminated by Ellis [8] appeared with such a contention that "the complexity of language emerges from relatively simple developmental process being exposed to a massive and complex environment. The interactions that constitute language are associations, billions of connections, which co-exist within a neural system as organisms co-exist within an eco-system. And systematicities emerge as a result of their interactions and mutual constraints" (p. 63).

4. O'Grady [19] believes in grammatical properties but opposes grammatical principles. Although O'Grady [20] states that "there is currently no comprehensive emergentist theory of language or its acquisition, there are various emergentist-inspired research programs devoted to the construction of such a theory" (p. 6). He constantly holds that the core properties of language are best understood by reference to the properties of quite general cognitive mechanisms and their interaction with each other and with experience. The viability of this idea can and must be measured against its success in confronting the classic empirical challenges of linguistic analysis, figuring out how language works and how it is acquired.

5. Nativist emergentism, argues that language learning differs from the ways connectionist views offer. Nativist emergentists believe in an inborn acquisition device dedicated to language, but they do not agree with the grammatical character of this inborn device [12].

6. Connectionist modeling provides a useful way to test various predictions about language acquisition, processing, change, and evolution. However, the eliminativist position is far from universally accepted within emergentism [20]. Goldberg [10], Tomasello [25], and O'Grady [19] as emergentists acknowledge symbolic representations of one form or another but still they reject the view that the properties of those representations should be attributed to innate grammatical principles.

4. Emergentism and Second Language Acquisition

Many researchers within emergentist frameworks believe that language develops as learners move from the learning of exemplars (words, formulae) that are committed to memory; from these, regularities emerge, giving rise to slot-and-frame patterns, such as "all-gone" + referent or can't + verb. As more and more of these formulae develop, they are compared and analyzed, regularities extracted and applied elsewhere. Second language acquisition in emergentism

occurs on the basis of associative processes, rather than the construction of abstract rules [16].

Verbs have been found to be particularly productive in allowing children to make abstract generalizations about their argument structure on the basis of the formulaic sequences they appear in (Goldberg, 1999). In second language acquisition, chunks are also very common in the early stages, and learners have been shown to gradually analyze them into their constituents [15]. Ellis [8] has also argued that these processes of chunking (i.e. moving from unanalyzed chunks to abstract generalizations) are central to second language acquisition.

Emergentism sharply opposes generativism and interactionism. In this regard, Norris and Ortega [17] state that "on the one hand, it is incompatible with generative SLA because it denies symbolism, modularity, and innatism, and it removes linguistics from the center of the research domain, replacing it with cognitive architecture. On the other hand, in spite of the shared interest in functionalist explanations and cognitive constructs, emergentist theory resonates little with interactionist SLA. The highly specialized neurobiological treatment of cognitive processes, the lack of a traditional dichotomy between representation and access, and the absence of interest in non-cognitive variables (social, affective, educational, etc.) all differentiate emergentist from interactionist perspectives" (p. 724).

Ellis [4] disputed the view held by generative linguistics that such a complex phenomenon as language can only be learnt if it is assumed that humans are endowed genetically with a language specific learning device. Emergentists, as O'Grady ([22]) reports, claim simple learning mechanisms are sufficient to bring about the emergence of complex language representations. Nevertheless, this perspective toward learning has so far failed to take into account how language competence could emerge.

Finally, emergentism provides a combined functional and neurobiological approach to language acquisition that views grammar as a complex, rule-like, but not rule-governed system arising from the interaction of very simple learning mechanisms in the organism (the architecture of the human brain) with the environment (massive exposure to input). Emergentist theories of L2 acquisition seek to explain the frequency and regularity of linguistic input to which the learner must be exposed in order for the processing system (i.e., the brain) to develop a functional set of weights (i.e., degree of interconnectivity among nodes) that will match patterns underlying that input [24]. Speeded, accurate production of output that matches the input provides evidence that such functional sets of weights in the neural networks have been established on the basis of simple learning algorithms and exposure to positive input alone [4]. Consequently, emergentist/connectionist studies typically employ computer modeling experiments and trials

with human subjects under laboratory conditions, with interpretations based on reaction-time decision tasks involving carefully controlled input [3].

Concluding Remarks

In the domain of language acquisition, emergentists believe that just simple learning mechanisms found somewhere in cognition are enough to cause the emergence of complex language manifestation. Their emergentist perspectives are somehow different: empiricist emergentists who radically reject anything innate or even the existence of the mind. This approach rejects the existence of a pre-determined, modular faculty or capacity in mind. On the other hand, nativist emergentists believe in something innate with which the baby is born, but it is the interaction with the environment that enable children to learn their own language. In second language acquisition, it is stated that emergentism is an exemplar-based approach, meaning that learning occurs due to the examples second language learners are exposed to in the input. From these numerous examples, patterns and regularities emerge to form what looks on the surface to be knowledge or in the case of language, rules. But the actual claim of the theory is that such patterns and rules are illusory, that what really exists in the mind/brain of the learner is a system of weighted connections, with weight referring to the relative strength of the connections. For example, if a second language learner hears the sound sequence /ti/ as an isolated word, the first thing that pops into that person's mind is the word "tea." But there is also "tee." Thus, frequency of exemplars in the input plays a major role in second language acquisition (strength building) under emergentism. Within SLA, as mentioned earlier, emergentists have challenged the notion of an innate knowledge source that is language specific and while emergentism has made headway within SLA, empirical emergentist research on SLA is still scant [26].

References

- [1] Bates, E., & MacWhinney, B. What is functionalism? *Papers and Reports on Child Language Development*, 27, 137-52, 1988.
- [2] Brown, D. H. (5th Ed.). *Principles of language learning and teaching*. New York: Pearson Education Inc. (2007).
- [3] Ellis, N. C., & Schmidt, R. Morphology and longer distance dependencies: Laboratory research illuminating the A in SLA. *Studies in Second Language Acquisition*, 19, 145-71, 1997. doi:10.1017/S0272263197002027
- [4] Ellis, N. C. Emergentism, connectionism and language learning. *Language Learning*, 48, 631-64, 1998. doi:10.1111/0023-8333.00063
- [5] Ellis, N. C. Cognitive approaches to SLA. *Annual Review of Applied Linguistics*, 19, 22-42, 1999. doi:10.1017/S0267190599190020
- [6] Ellis, N. C. Frequency effects in language processing: a review with implications for theories of implicit and explicit language acquisition. *Studies in Second Language Acquisition*, 24, 143-88, 2002a. doi:10.1017/S0272263102002024
- [7] Ellis, N. C. Reflections on frequency effects in language acquisition: A response to commentaries. *Studies in Second Language Acquisition*, 24, 297-339, 2002b. doi:10.1017/S0272263102002140
- [8] Ellis, N. C. Constructions, chunking, and connectionism: The emergence of second language structure. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 63-103). Oxford: Blackwell Publishing. (2003).
- [9] Elman, J. L., Bates, E. A., Johnson, M. H., Karmiloff-Smith, A., Parisi, D., & Plunkett, K. *Rethinking innateness: A connectionist perspective on development*. Cambridge: MIT Press. (1996).
- [10] Goldberg, A. E. The emergence of the semantics of argument structure constructions. In B. MacWhinney (Ed.), *The emergence of language* (pp. 197-213). Mahwah, NJ: Lawrence Erlbaum Associates. (1999).
- [11] Gregg, K. R. The state of emergentism in second language acquisition. *Second Language Research*, 19, (2) pp. 95-128, 2003. doi:10.1191/0267658303sr213oa
- [12] Jalilzadeh, K. Emergentism in first language acquisition. *European Journal of Scientific Research*, 57 (1) pp.152-155, 2011.
- [13] MacWhinney, B. (Ed.) *Emergence of language*. New Jersey: Erlbaum. (1999).
- [14] Mill, J. S. *A system of logic ratiocinative and inductive*. London: Longmans, Green and Co. (1930).
- [15] Mitchell, R., & Martin, C. Rote learning, creativity and understanding in classroom foreign language teaching. *Language Teaching Research*, 1, 1-27, 1997. doi:10.1177/136216889700100102
- [16] Mitchell, R., & Myles, F. *Second language learning theories*. London: Hodder Arnold. (2004).
- [17] Norris, J., & Ortega, L. Defining and measuring SLA. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 717-761). Oxford: Blackwell Publishing. (2003).

[18] O'Grady, W. Toward a new nativism. *Studies in Second Language Acquisition*, 21, 621-633, 1999. doi:10.1017/S0272263199004040

[19] O'Grady, W. *Syntactic carpentry: An emergentist approach to syntax*. Mahwah, NJ: Erlbaum. (2005).

[20] O'Grady, W. The emergentist program. *Lingua*, 118, 447-464, 2008. doi:10.1016/j.lingua.2006.12.001

[21] Richards, J. C., & Schmidt, R. *Longman dictionary of language teaching and applied linguistics*. London: Pearson Education Limited. (2002).

[22] Shakouri, N. Revitalization of emergentism in SLA: A panacea. *International Journal of Applied Linguistics & English Literature*, 1 (5), 19-24, 2012. doi:10.7575/ijalel.v.1n.5p.19

[23] Simon, H. A. The architecture of complexity. *Proceedings of the American Philosophical Society*, 106, 467-482, 1962.

[24] Sokolik, M. E. Learning without rules: PDP and a resolution of the adult language learning paradox. *TESOL Quarterly*, 24, 685-96, 1990. doi:10.2307/3587115

[25] Tomasello, M. *Constructing a language: A usage-based theory of language acquisition*. Cambridge: Harvard University Press. (2003).

[26] VanPatten, B., & Benati, A. *Key terms in second language acquisition*. New York: Continuum International Publishing Group. (2010).

[27] Vygotsky, L. S. *Thinking and speech*. In R. W. Rieber & A. S. Carton (eds), *The Collected Works of L. S. Vygotsky* (Vol. 1: Problems of general psychology) (pp. 39-285). New York: Plenum Press. (1987).

Vitae

Mohammad Khatib is assistant professor of TEFL at Allameh Tabataba'i University, Tehran, Iran. He holds a Ph.D. in TEFL (Allameh Tabataba'i University, 1999), an M.A. and a B.A. in English literature from Tehran University (1977 and 1972 respectively). He began teaching at Allameh Tabataba'i University in 1981. He presently offers graduate and post-graduate courses in SLA theories, methodology, literature in EFL classes, and English literature. His main areas of interest include SLA theories, language learning strategies, culture and the integration of language and literature. He has published some articles on applied linguistics in Iranian and international journals of applied linguistics. He has translated a book of short stories from famous writers of the world and published a guide book on Shakespeare's selected sonnets.

Kamran Mehrgan is currently a Ph.D. candidate of TEFL at Islamic Azad University, Science and Research Branch, Tehran, Iran. He is a faculty member of Islamic Azad University, Masjed Soleiman Branch, Masjed Soleiman, Iran. He has taught English courses for ten years at different universities in Khouzestan, Iran. Furthermore, he has some articles and books published.