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Post-structuralist social theories of second language acquisition

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Abstract

Traditional social models of second/foreign language learning sought to establish correlations between particular social factors and language learning. This correlation-seeking approach is rooted in the traditional sciences, especially Newtonian physics, which analyzed systems into their components and investigated them in isolation, resting on the assumption that the behavior of a complex system is the product of its individual components. By contrast, more current social theories on SLA emphasize the heterogeneous nature of social reality and the learner. Moreover, they recognize the crucial role of social processes or power relations in shaping language learning opportunities. They also draw on language socialization and highlight the emergent nature of the social world. The aim of this article is to present some of these theories and show how their development was influenced by the publication in 1997 of a seminal article by Diane Larsen-Freeman, titled "Chaos/complexity science and second language acquisition".

Keywords: postructuralist theories; chaos/complexity theory; language socialization, social identity; ecological perspective

1. Introduction

Theories that envisage second/foreign language acquisition as grounded in context and experience point to the significance of social and cultural dimensions in language learning. Widely cited and discussed theories of this kind comprise: (1) Schumann's (1978) acculturation model, (2) Giles and Byrne's (1982) intergroup model, (3) Stern's (1983) framework for examination of second language learning, (4) Gardner's (1985, 2001) socio-educational model, (5) Schieffelin and Ochs's (1986) theory of language socialization, (6) Norton's (1997) theory of social identity, (7) Van Lier's (2000) ecological perspective, and (8) Ellis's (2008) framework for explaining L2 acquisition. Although the accounts mentioned above are homogeneous in terms of the perspective they adopt, they differ when it comes to the prioritized line of enquiry. In particular, some of these models (1, 2, 3, 4, 8), referred to as *structuralist models*, look for correlations between individual social factors or settings and second/foreign language learning. This approach is based on the traditional sciences, especially Newtonian physics, which divided systems into their components and investigated them in isolation, assuming that the behavior of a complex system is the product of its individual elements (cf. Dörnyei, 2009; Ellis, 2012). Moreover, they represent a dichotomous view of the cognitive and the social as separate realms of learning a language. The remaining theories (5, 7, 8) represent a *post-structuralist* turn in the theory of second/foreign language acquisition. They recognize the crucial role of social processes or power relations in shaping language learning opportunities (cf. Barkhuizen, 2007; Ellis, 2012). What is more, they draw on language socialization and emphasize the heterogeneous and emergent nature of the social world. Their development was influenced by the publication in the year 1997 of a seminal article by Diane Larsen-Freeman, entitled "Chaos/complexity science and second language acquisition". By comparing learning a language to the dynamic processes of complex systems, Larsen-Freeman (1997) offered a broader perspective on language learning, a metaphor which helps explain the post-structuralist turn in the theory of second/foreign language acquisition.

2. A different metaphor for language learning

The relatively recent science of chaos/complexity theory has offered a new paradigm for understanding the basic aspects of mathematics and physics. It has also been seen as a potentially applicable model in the social sciences such as sociology (Giddens, 1986; Urry, 2005) or psychology (Bütz 1995). Second language acquisition (SLA) joined in when Diane Larsen-Freeman published her inaugural article "Chaos/complexity science and second language acquisition" in

1997, in which she drew direct parallels between complex nonlinear systems existing in nature and language learning. According to Larsen-Freeman (1997), this analogy might prove helpful in recasting some assumptions about basic mechanisms and concepts in applied linguistics. This article effectively marked the beginning of considerable interest in applying the new perspective to the field, as reflected in a number of publications in the last twenty years (e.g., Mallows, 2002; van Lier, 2004). The present section will provide an overview of features characterizing complex nonlinear systems, followed by a brief discussion of how viewing learning a second/foreign as a complex nonlinear system might affect our understanding of such notions as the mechanism of language acquisition and the definition of learning and interlanguage, with due attention to individual differences.

Theorists have identified a number of traits characterizing complex nonlinear systems. They are complex, dynamic, nonlinear, chaotic, unpredictable, sensitive to initial conditions, open, self-organizing, feedback-sensitive, and adaptive; they also have strange attractors, which exhibit fractal structures (Larsen-Freeman, 1997, p. 142). It may be presumed that the complexity of these systems results from the fact that they usually consist of a large number of autonomous but interrelated elements; however, their peculiarity stems from the fact that the behavior of a system as a whole includes characteristics that cannot be predicted from the properties of its individual parts. As Larsen-Freeman (1997, p. 142) put it, "the behavior of complex systems emerges from the interaction of its components, it is not built into any one component". What is more, all components of a complex system change through time, which reflects the system's dynamic character.

Furthermore, the result of these dynamic interactions of various elements of the system is not proportional or entirely predictable. The disproportion of the effect to the cause, reflecting the nonlinear character of complex systems, can be illustrated by the so-called *avalanche effect*, a situation in which a rolling pebble can cause a landslide. The unpredictability of these systems results from their chaotic or random character. In other words, a small change in the initial conditions may result in an enormous change in the behavior of that system. The so-called *butterfly effect* has become the most commonly cited example of this sensitivity to the initial conditions. It is based on the assumption that a change in the weather conditions in one part of the world, for example, the formation of a hurricane, may be caused by a butterfly flapping its wings in a distant part of the world a few weeks before (Larsen-Freeman, 1997, p. 144). As mentioned earlier, the unpredictability of complex systems is partial. Paradoxically, the chaos or randomness of these systems is predictable; what cannot always be discerned, however, is the effect that individual elements might have

on the entire system. With so many interacting variables producing new effects in a constantly evolving system, it is sometimes difficult to foresee its behavior (Harshbarger, 2007). For instance, it is not always possible to predict exactly where or when a natural disaster will strike or how long it will last. Nonlinear dynamic systems are also open and self-organizing structures, which means that, due to constant energy flows from the environment, they are far-from-equilibrium and constantly grow in order and complexity (Larsen-Freeman, 1997, p. 144). The part of the 'the big bang' theory explaining that the formation of structures such as stars, planets or galaxies followed the rapid expansion of a dense state, exemplifies these features of complex systems.

Another characteristic of non-linear dynamic systems is that the order they maintain is conditioned by the fact that they are feedback-sensitive. In other words, they regularly exchange feedback with the environment. Both positive (amplifying) and negative (damping) effects are "checking powers" of a change (Larsen-Freeman, 1997, p. 145). Changes in and reorganization of elements are reactions of the systems to problems posed by the environment, which reflects the adaptive character of such complex systems (Holland, 1992; Larsen-Freeman, 1997; Larsen-Freeman & Cameron, 2008). The growth of a plant around obstacles is a simple example of adaptation. When there are no obstacles, a plant grows according to a certain pattern. The process changes if obstacles occur and then the plant is said to adapt to its environment.

In addition to all the aforementioned characteristics, complex non-linear systems also have *strange attractors*. Specifically, they take trajectories which never follow the same patterns. Moreover, these paths are *fractal* in shape, that is, similarly to geometrical figures, they are "self-similar at different levels of scale" (Larsen-Freeman, 1997, p. 146). Accordingly, although the general pattern of the system is recognizable, its single dimensions are impossible to predict. Larsen-Freeman (1997, p. 146) illustrates this characteristic of a complex system with a tree, stating that although trees are different in terms of shapes, leaf structure or a number of branches, the global picture of a trunk and branches growing out of it makes it possible to distinguish a tree from all other objects.

Considering similarities between second language acquisition and complex non-linear systems, Larsen-Freeman (1997, 2012) asserts that second language learning is a dynamic, complex, non-linear, open, self-organizing, and feedback-sensitive process, shaped by strange attractors. The *open*, *dynamic* and *non-linear* nature of second language acquisition reveals itself, for example, in the constantly changing character of learner interlanguages. Thornbury (2001, p. 48) supports this view, stating that the learner's grammar is constantly reorganized as a result of exposure to incoming data, with some periods of relative stability replaced by periods of variability and sometimes even backsliding.

For example, a student learning English as a foreign language may acquire a rule to form adverbs by adding *-ly* to adjectives, as in: *nice – nicely*. However, when exposed to new adjectives, such as *fast* or *straight*, he or she may overgeneralize *-ly* to irregular adverbs and produce the erroneous forms such as *fastly* or *straightly*. Due to the fact that the system is *feedback-sensitive*, this temporary state of chaos subsides and order is restored when the provision of negative evidence from the environment results either in reformulating the existing rule or adding a new one to the linguistic repertoire (Larsen-Freeman, 1997; Larsen-Freeman & Cameron, 2008).

Moreover, Larsen-Freeman (1997) views second language acquisition as *a complex system*. This is evidenced by the fact that the level of proficiency that language learners achieve is determined by a plethora of interrelated factors, among which she enumerates socio-psychological factors, such as motivation and attitude, personality, cognitive style, sex, age, interests, etc. Finally, Larsen-Freeman (1997) argues that *strange attractors* constrain the development of speakers' interlanguages, which is evident in differences in phonetic realizations of some English phonemes by learners whose mother tongues are different. Due to negative transfer, Polish learners, for instance, usually devoice word-final obstruents (Sobkowiak, 2004), producing words such as [dok] for *dog* or [wa:s] for *was*. For the same reason, Italian speakers tend not to pronounce the word-initial voiceless fricative /h/, for example, their pronunciation for *have* is often [æv].

According to Larsen-Freeman (1997, p. 152), seeing second language acquisition as a system characterized by the above-mentioned features, may find its reflection in reconsidering some fundamental assumptions made about the process so far. Among these she enumerates, for example, the mechanisms of acquisition, the definition of learning, the stability/instability of interlanguage, and individual differences. As for the mechanisms of language acquisition, Larsen-Freeman (1997, p. 154) suggests that advocating complementarity rather than exclusiveness, a complex model of second language acquisition can reconcile the debates between two groups of applied linguists that hold apparently opposing views, namely, innatists and constructionists. A compromise is possible, as looking at the problem from the complex-systems perspective, both cognitive and sociocultural elements constitute subsystems of the second language acquisition process that takes place through constant interactions of these subsystems, alternating the state of order with chaos. This interaction between various elements results in changes shaping language acquisition. The rate of change is unpredictable and depends on the character of the mutual bearings of the elements. However spontaneous the pattern formation process might be, thanks to the adaptability of the system, it will always conform to its general shape. In other words, even if a learner temporarily creates a form that

does not reflect input, such as, for example, *putted*, he or she will eventually create a system that reflects the target language (Larsen-Freeman, 1997). In addition to providing a new paradigm for the language acquisition mechanism, drawing parallels between complex non-linear systems and second language acquisition will definitely induce a redefinition of the concept of *learning* or a reconsideration that characterizes interlanguage as *systematic*.

What is of special interest in the light of the present work, however, is the question as to how the adaptation of chaos/complexity theory to second language acquisition will influence the methodology of research investigating differential success among second language learners. Larsen-Freeman (1997) questions the validity and applicability of the instruments used in the field to examine the relationships between single variables reflecting students' individual differences and their second language proficiency. She also argues that although simple correlations or univariate analysis may show that the investigated variables are related, they provide no clue whatsoever as to whether a given individual characteristic led to acquisition. Moreover, given that second language acquisition is a complex system, the picture of the whole process is more than the behavior of its individual components. Therefore, creating a theory of second language learning by adding findings from separate analyses cannot be considered an adequate way of describing the complexity of the process. Finally, individual learner factors are interrelated and abstracting single variables from others might distort their true value in achievement (Larsen-Freeman, 1997; Larsen-Freeman & Cameron, 2008).

3. Post-structuralist theories of SLA

By comparing learning a language to the dynamic processes of complex systems, Larsen-Freeman (1997) helped to explicate the post-structuralist turn in the theory of second/foreign language acquisition which questioned traditional, structuralist social models of SLA, such as Schumann's (1978) acculturation model, Giles and Byrne's (1982) inter-group model, Stern's (1983) framework for examination of second language learning, Gardner's (1985, 2001) socio-educational model, or Ellis's (2008) framework for explaining L2 acquisition. Based on the assumption that language learning is a product of its components, these models focused on relationships between individual social factors and second language learning. In what follows, three post-structuralist social theories of learning a SLA will be presented, in which the role of social processes (e.g. power relations and social interactions) in shaping the learning process is stressed. These theories are socialization theory (Schieffelin & Ochs, 1986), social identity theory (Norton, 1995, 1997), and the ecological perspective (Van Lier, 2009).

3.1. Schieffelin and Ochs's (1986) theory of language socialization

Socialization theory is rooted in the concept of *language socialization*, defined Duff (2007, p. 310) as "[t]he process by which novices or newcomers in a community or culture gain communicative competence, membership, and legitimacy in the group. It is a process that is mediated by language and whose main goal is the adoption of appropriate identities, stances (epistemic or empathetic) or ideologies, and other behaviors associated with the target group and its normative practices". This theory was proposed by linguistic anthropologists Scheffelin and Ochs (1986) on the basis of their ethnographic studies conducted in non-Western societies of Madagascar, Western Samoa, and Papua New Guinea (Scheffelin & Ochs, 1986). Having analyzed developmental stories from three different communities, the authors concluded that the speech of caregivers expressed the values and beliefs of their social group and therefore their interaction with children must be more than just "biologically designed choreography". Rather, according to Scheffelin and Ochs (1986), it is also a cultural activity reflecting a larger system of social meanings of the community into which the child is socialized. Thus, it involves both using language to introduce an infant to the social norms of the group and socializing a child to use language.

This conceptualization of learning the first language has recently attracted attention of second language researchers who hypothesized that learning a second language involves becoming a member of the community that speaks it, and, conversely, learning to become a member of the community means learning its language (Ellis, 2012). However, Duff (2007) argues that this analogy must be applied with caution and explains that although second language socialization shares many principles of the first language socialization (e.g., both first and second language socialization may take place at home, school, and workplace), the former is more complex, as it deals with learners who have already acquired a system of linguistic and social rules. What is more, participants of second/foreign language socialization might not experience the same degree of acceptance or accommodation within the target community as their first language counterparts. For example, they might face resistance on the part of the new group for ideological or practical reasons; or second language learners might not be willing to become members of the target language group.

These reservations, however, did not prevent Duff (1995, 1996) from adopting the language socialization perspective in her studies, in which she documented how the socio-political changes connected with democratization in the post-1989 Hungary affected the change in the traditional genre of oral assessment, called *feléle* (recitation), in three dual-language (Hungarian-English) secondary schools in Hungary. These schools, established in the second half of the

1980s, together with the introduction of English as a new medium of instruction, adopted the westward-looking worldview and consequently advocated new teaching practices departing from what was the norm in the conservative Hungarian educational system, based on authoritarian principles, that fostered discipline, conformity and unquestioned subordination. One of the innovations was the introduction of a new genre of evaluating students' progress, based on group work, pair work or on prepared students' presentations, which replaced the traditional system in which the teacher asked one student, unannounced, to recite the previous lesson and then evaluated his or her performance in front of the class. The results of this research reveal how sociopolitical changes influence classroom interactional patterns.

Another study, conducted by Paugh (2005) on the Caribbean island of Dominica, explored how language ideologies of community members influence the language socialization of children in school and home environments. There are two languages used in the community, a French-based Creole spoken mainly in rural settings, referred to as Patwa, and English, the official language of the state. Patwa is generally believed by parents and teachers to impede children's acquisition of English and consequently to limit their social mobility. This concern resulted in the community's institution of a policy designed to discourage children from using Patwa in most in school and home settings. However, Paugh (2005) discovered that adults considered Patwa to be better than English for expressive functions such as, for example, arguing, teasing or joking, and often switched to it in the presence of children. As a result, children speak English at school and Patwa at home. This complex linguistic behavior reflects their awareness of power relations and the social roles of the community. These observations led Paugh to conclude (2005, p. 1809) that "language socialization patterns are shaped, organized, and indicative of wider patterns of interaction and ideologies held by a community or social group".

Duff's (1995, 1996) and Paugh's studies focused on how learners were socialized through the use of language. A few language socialization studies addressed the other facet of this process – how learners are socialized to use language. This linguistic aspect of language socialization was explored, for example, by Matsumura (2001). One of the aims of this year-long study was to examine changes in the perception of social status, along with the influence of that changed perception, on the pragmatic use of English by comparing two groups of English learners: a group of Japanese students learning English first in Japan and then in Canada (the Vancouver students), and a group that learnt English in Japan (the Kyoto students). The results of the study revealed that over the entire observation period the Kyoto group made only slight modifications to the way they gave advice to individuals with equal or lower status. In contrast, the preferences of

the Vancouver students to give advice to individuals with equal or lower status were different from those of native speakers' when they studied English in Japan (they used direct speech acts), but became the same as native speakers' when they were in Canada (they used indirect speech acts). What is more, when choosing linguistic forms to give advice, they considered not only the status of their interlocutor, but also the topic of the conversation and the situation they were in. On the whole, Matsumura's (2001) study demonstrated that the development of pragmatic competence was possible when second language learners interacted with and became socialized into the target-language community.

By providing contextualized accounts of second language socialization, researchers generated a new understanding of how learning/teaching a non-native language is influenced by the social and cultural systems in which it is embedded. Summarizing the research, Duff (2007, p. 311) formulated the following key tenets of language socialization:

1. Social interaction is important in developing both communicative competence in the target language and the knowledge of values, practices, identities and stances of the target group.
2. The process of socialization is bidirectional in that more knowledgeable members of a group play a significant role in introducing novices into the values, ideologies and traditions of the group, and at the same time novices 'inform' their more proficient interlocutors about the needs they have.
3. Language and other semiotic systems mediate communication and other cultural knowledge.
4. Learning a language and socialization is a permanent process.
5. Second/foreign language socialization does not necessarily result in the reproduction of the target language cultural and linguistic repertoire. It may lead to the partial acquisition of the additional language and culture or rejection of its norms and practices.

3.2. Norton's (1997) theory of social identity

Another post-structuralist social theory, *social identity theory*, developed by Bonny Norton (1995), grew out of her concern about the lack of a comprehensive theory of social identity which would integrate the language learner and the language learning context, and account for the influence of power relations on learning a second language. Norton (1995, p. 13) argued that "SLA theory needs to develop a conception of the language learner as having a complex social identity that must be understood with reference to larger, and frequently inequitable social structures which are reproduced in day-to-day social interactions". Taking this position, Norton (1995, p. 13) conceived of language as a medium of

social relations rather than a neutral means of communication, as it is through language that a person either "gains access to – or is denied access to – powerful social networks that give learners opportunity to speak".

This theory was informed by data obtained from longitudinal case studies of five adult female immigrants in Canada (Norton, 1995). On the basis of diaries, questionnaires as well as individual and group interviews, Norton (1995) documented how these women's social self-identities or the identities attributed to them influenced the way they created, responded to and sometimes refused the opportunity to interact with native speakers. Eva's case, for example, showed how her social identity changed over time and how that change affected her social practices. At first, Eva conceptualized herself as an immigrant – an incompetent speaker of English, which made her feel "worse" and "stupid" when interacting with her co-workers. She assumed that because of her linguistic limitations her interlocutors would not be receptive to her. This resulted in her unwillingness to initiate a conversation or take part in it. With time, Eva's communicative competence improved and she started to challenge her inferior position at work as an illegitimate speaker of English; she developed a new identity that Norton (1995, p. 25) referred to as a "multicultural citizen". Together with the improvement of her linguistic skills, Eva acquired an awareness of having the right to speak. Consequently, she started to claim spaces in conversations with her co-workers, and was able to respond adequately when treated with disrespect. Her new sense of who she was and how she related to the social world transformed her social practices and taught her how to challenge her marginalization. The case study of another woman, Martina, was labeled by Norton (1995, p. 20) as an example of "multiple identity and a site of struggle". When Martina came to Canada with her family, neither she nor her husband could speak English, so initially she relied linguistically on her children (aged 17, 14, and 11). As an immigrant, Martina did not feel comfortable in speaking English and referred to herself as "stupid" or "inferior", even after she had made considerable progress. However, Martina refused to be silenced, as apart from being an immigrant she was also a mother and a primary caregiver (she could not rely on her husband); she consequently felt responsible for most of the organization in the family. For example, she had to talk to the landlord or arrange schools for her children. Moreover, Martina helped her husband to get unemployment insurance when he lost his job. Martina's determination to speak resulted from her resisting the subject position as an immigrant woman in favor of the roles of a mother and wife. This in turn led her to develop an awareness of the right to speak and, consequently, build communicative competence.

Drawing on her data analysis from this study as well as some theoretical sources such as Weedon's (1987) post-structuralist approach to social identity,

and a feminist post-structural tradition, Norton (1995) suggested re-conceptualizing the notion of *the individual* and *the relationship between the individual and the context of language learning*. She asserted that the traditional view of a learner defined with respect to a set of unique, fixed and unidimensional characteristics, influencing directly or indirectly the process of language learning, should be replaced with a perspective depicting the individual as diverse, contradictory and dynamic, and both a subject of and subject to power relations. In other words, learners possess a number of different social identities, which can be changed, added or abandoned as a result of circumstances. Moreover, learners must develop an awareness of the right to speak, which involves understanding how the rules of speaking are established to protect the interests of the dominant group. Consequently, learners must be prepared to struggle to develop an identity that will help them to create optimal conditions to learn the target language.

Furthermore, although Norton (1997, 2000) moves beyond the notion of a unitary subject and relates the language learner to the language learner context, she has been criticized for holding still too structuralist a view of social identity. For example, Kramsch (2002, p. 26) argues that, in Norton's theory (1995), learners' multiple social identities are *given* to them by the position they have in the social world and in that sense can be seen as rather static entities. Kramsch (2002) contrasts *social identity theory* with the *ecological perspective* suggested by van Lier (2009), which takes a more dynamic approach depicting multiple identities, with many subject positions *emerging* as a result of the interaction between the social world and a given discursive situation.

3.3. Van Lier's (2009) ecological perspective

According to van Lier (2009), the notion of *emergence* is one of the main assumptions of the ecological approach to language learning. It replaces Cartesian reductionism, the tradition of investigating complex phenomena by dividing them into their components and analyzing these as separate entities. Instead, everything is treated as an indivisible whole consisting of interdependent parts. This interdependence implies the changing or emerging nature of properties which cannot be reduced to those of prior stages. Consequently, in the ecological perspective, the learner is immersed in the sociocultural environment full of meanings which, as van Lier (2009, p. 246) points out, "become gradually available as the learner acts and interacts within and with this environment".

Apart from the dynamic and emerging nature of learning a second/foreign language, the ecological approach accentuates the social activity of the learner, and especially the crucial role of both verbal and non-verbal interaction the learner engages in. To quote van Lier (2009, p. 246), "they do not just facilitate

learning, they are learning in a fundamental way". Looking at language as one of many sign-making systems is derived from a paradigm of linguistic research called *language ecology* or *ecolinguistics.*[1] This field of linguistics takes a semiotic approach to language, which implies that communicating is more than using words; rather, it is also employing other aspects of making meaning, such as of body language, drawings, or artifacts. Thus, in terms of learning a language, to quote van Lier (2009, p. 252), "the environment provides a 'semiotic budget' (...) within which the active learner engages in meaning-making activities together with others who may be more, equally or less competent in linguistic terms". Therefore, the function of the learning environment is not merely to provide a linguistic input for a passive learner but to create opportunities for interaction that a given situation 'affords' (van Lier, 2009, p. 252). *Affordance*, as van Lier (2004, p. 91) sees it, is "action in potential and it emerges as we interact with the physical and social world". To clarify the concept, van Lier (2009, p. 252) provides an example of a leaf which presents different affordances for different organisms. It could be, for example, food for a caterpillar, shade for a spider or medicine for a shaman. Without changing its properties, a leaf is employed in a variety of ways depending upon how it is perceived by its user. Adapted in the ecological perspective to language learning, *affordance* is an alternative concept to *input* and refers to the relationship between the learner and a feature of the environment that is relevant to her or him (van Lier, 2009, p. 252). More specifically, an active learner is able to discern linguistic affordances and employ them in a linguistic activity. Finally, an ecological perspective highlights the role of interaction in learning a language. According to van Lier (2009, p. 247), it is in a dialogue that negotiating of meaning takes place which is indicative of learning processes at work. While negotiating meaning, new linguistic items are acquired and then included in the learner's target language inventory. To sum up, an ecological perspective provides a comprehensive framework for studying a second/foreign language. It takes a holistic approach to the process by placing the learner in a totality of situational, cultural and societal factors which collectively shape the acquisition of the target language. Moreover, the theory places a strong emphasis on the emergent nature of language learning, the crucial role of affordances in the environment, and the active role of the learner in building her or his linguistic repertoire through negotiating meanings.

[1] Language ecology or ecolinguistics was defined in 1972 by Haugen (2001, p. 57) as "the study of interactions between any given language and its environment".

4. Conclusion

The post-structuralist social theories of learning a second/foreign language presented in this article explain acquisition processes in terms of collaborative, interactional and dynamic repetition, thus showing the significance of the sociocultural dimension in these processes. What is more, contrary to structuralist models, they place emphasis on the fact that elements of a system constantly emerge and therefore cannot be limited to the previous stages of development. This shift in perspective from objective and reductionist to reflexive and de-centered was influenced by an article by Larsen-Freeman (1997) in which she made a successful attempt to adapt chaos/complexity theory to second/foreign language acquisition. Although the analogy between the complex system and second language acquisition made by Larsen-Freeman (1997) proved stimulating, it cannot be accepted without reservations. First of all, the implications of the parallel for language acquisition such as: "blurring of boundaries", redefining unsatisfactory terms or reconsidering vague concepts (Larsen-Freeman, 1997, pp. 157-160), are not innovative, as they have always accompanied both theoretical and practical advancements in the field. Examples of such advancements include the introduction of the mixed-methods approach, the holistic understanding of teaching and learning (Kumaravadivelu, 2006), or the addition of new taxonomies for individual differences (Dörnyei, 2005; Ellis, 2012). Secondly, referring to the traditional second language acquisition methodology as reductionist and simplistic (Larsen-Freeman, 1997, p. 158) proves premature, as no adequate alternative research methodology has been fully developed to address the assumptions of the chaos/complexity theory. What is more, although the complexity model proposed by Larsen-Freeman and Cameron (2008) could be seen as a useful step towards creating a practical guide for researchers to plan a study from the perspective of the theory, it requires further refinement to satisfy the needs of those who want to embark upon the investigation of the complex reality of second language acquisition. Finally, the data obtained with the use of the existing tools might serve as a basis for further, complex theory-oriented research. Therefore, instead of seeing conventional studies as a threat to arriving at adequate scientific conclusions, one should integrate them with appropriate computer software, such as, for example multi-variate analysis, which might be a way to address complexity in an adequate way.

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