

SECOND LANGUAGE ACQUISITION AS A CHAOTIC/COMPLEX SYSTEM¹

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1. Introduction

In this paper, I present evidence to support the claim that second language acquisition (SLA) is a complex adaptive system. Like any other type of learning, language learning is not a linear process, and therefore cannot be deemed as predictable as many models of SLA have hypothesized it to be. Larsen-Freeman and Long (1991) state that “at least forty ‘theories’ of SLA have been proposed” (p. 227) and it is my contention none of these attempts to explain SLA present a thorough explanation for this complex phenomenon. Countless theories have been developed to explain SLA, but most such theories focus merely on the acquisition of syntactic structures and ignore other aspects of the phenomenon.

2. Second language acquisition theories

Although there is a huge number of SLA theories, I will briefly summarize only eight of them: behaviorism, acculturation, connectionism, universal grammar hypothesis, input hypothesis, output hypothesis, interaction hypothesis, and sociocultural theory.

Behaviorism gave birth to a stimulus-response (S-R) theory which understands language as a set of structures and acquisition as a matter of habit formation. Ignoring any internal mechanisms, it takes into account the linguistic environment and the stimuli it produces. Learning is an observable behavior which is automatically acquired by means of stimulus and response in the form of mechanical repetition. Thus to acquire a language is to acquire automatic linguistic habits. According to Johnson (2004:18), “[B]ehaviorism undermined the role of mental processes and viewed learning as the ability to inductively discover patterns of rule-governed behavior from the examples provided to the learner by his or her environment”. Larsen-Freeman and Long (1991:266) consider that S-R models offer “little promises as explanations of SLA, except for perhaps pronunciation and the rote-memorization of formulae”.

¹ I am indebted to Junia Braga, Marcio Gomes and Magda Velloso for their insightful comments and reviewing.

Another environmental-oriented theory is proposed by Schumann (1978). In his view, SLA is the result of acculturation which he defines as “the social and psychological integration of the learner with the target language (TL) group” (p.29). The acculturation model argues that learners will be successful in SLA if there are fewer social and psychological distances between them and the speakers of the second language. In his famous investigation with six learners (2 children, 2 adolescents, 2 adults), he found out that “the subject who acquired the least amount of English was the one who was the most socially and psychologically distant from the TL group” (p.34).

As a counterpoint to the environmental perspective, Chomsky’s followers try to understand SLA in the light of his universal grammar (UG) theory, a human innate endowment. Chomsky (1976) is interested in the nature of language and sees language as a mirror of the mind. Although he is not concerned with SLA, his work has been influencing studies in our area. According to his theory, every human being is biologically endowed with a language faculty, the language acquisition device, which is responsible for the initial state of language development. The UG theory considers that the input from the environment is insufficient to account for language acquisition. In the same perspective, White (2003:22) says that “If it turns out that the L2 learner acquires abstract properties that could not have been induced from the input, this is strongly indicative that principles of UG constrain interlanguage grammars, parallel to the situation of L1 acquisition”. As Mitchel and Myles (2004:94) remind us “The universal Grammar approach is only interested in the learner as a processor of a mind that contains language” and not as a social being.

Influenced by Chomsky’s assumptions on language as an innate faculty, Krashen developed an influential proposal to explain SLA which he first named as monitor model (KRASHEN, 1978), with emphasis on the contrast between learning and acquisition, then input hypothesis (KRASHEN, 1985), focusing on the data which feed acquisition, and more recently, comprehension hypothesis (KRASHEN, 2004) emphasizing the mental process as responsible for acquisition. According to Krashen (2004:1),

The Comprehension Hypothesis is closely related to other hypotheses. The Comprehension Hypothesis refers to subconscious acquisition, not conscious learning. The result of providing acquirers with comprehensible input is the emergence of grammatical structure in a predictable order. A

strong affective filter (e.g. high anxiety) will prevent input from reaching those parts of the brain that do language acquisition.

Krashen's model views acquisition in a linear perspective which not only establishes a cause and effect relation between input and acquisition but also states that the grammatical structure is acquired in a predictable order. In addition to that, as in the other theories discussed so far, his theory does not go beyond the acquisition of grammatical structures.

Swain (1985, 1995) goes against Krashen's radical position towards the role of input and argues in favor of the output hypothesis. She claims that practicing the language helps learners observe their own production, which is essential to SLA. It is her contention that "output may stimulate learners to move from the semantic, open-ended non-deterministic, strategic processing prevalent in comprehension to the complete grammatical processing needed for accurate production" (Swain, 1995: 128). She explains that "learners may notice a gap between what they *want* to say and what they *can* say, leading them to recognize what they do not know, or know only partially" (p. 126). For her 'noticing' is essential to SLA. Besides 'noticing', she hypothesizes that output has other two functions: to test hypothesis and to trigger reflection, a metalinguistic function. She explains that learners 'may output just to see what works and what does not' (p. 132) and that they reflect upon the language they produce when negotiating meaning because the content of negotiation is the relation between the meaning they are trying to express and the language form.

Other attempts to explain SLA are the different versions of the interaction hypotheses defended by Hatch (1978) and by Long (1981, 1996), to name but two, which were also motivated by Krashen's Input Hypothesis. Both Hatch and Long consider that input alone is not sufficient to explain SLA. Hatch disagrees that learners first learn structures and then use them in discourse. She considers the reverse possibility. "One learns how to do conversation, one learns how to interact verbally, and out of this interaction syntactic structures are developed. (p. 404)".

Based on an empirical study, Long (1981) observed that in conversations between native and non-native speakers, there are more modifications in interaction than in the input provided by the native speakers. He does not reject the positive role of modified input, but claims that modifications in interactions are consistently found in successful SLA. Long (1996:451-2) suggests that

negotiation for meaning, especially negotiation work that triggers *interactional* adjustments by the NS or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways.

Larsen-Freeman and Long (1991:266) argue that the interactionist views are more powerful than other theories “because they invoke both innate and environmental factors to explain language learning”. I would add that they draw my attention because they view language not only as syntactic structure but also as discourse.

Connectionism in turn seeks to explain SLA in terms of mental representations and information processing while rejecting the innate endowment hypothesis. Elman *et al* (1996) agree that there are universal behaviors, but that does not mean that they are directly contained in our genes. Any learning is understood as a matter of neural networks. The networks learn in a *Parallel Distributed Processing* (Rumelhart et al, 1986) where connections are strengthened or weakened. Language learning is understood as the processing of experience and the repetition of experiences causes the strengthening of the connections. Ellis (2007) explains that “our neural apparatus are highly plastic in its initial state” (p. 82), but “the initial state of SLA is no longer a plastic system; it is one that is already tuned and committed to the L1” (p.83). He adds that “in the L2 situation, forms of low salience may be blocked by prior L1 experience, and all the extra input in the world may not result in advancement” (p. 84).

In contrast with the linearity of behaviorism, connectionism presupposes that some mental processes can occur in a parallel or simultaneous way and that knowledge is distributed among the various interconnections. Thus, learning does not occur in sequenced stages, but rather in parallel, i.e., in different parts of the brain simultaneously.

Last, but not least, the sociocultural theory (SCT), based on Vygotskian thoughts, claims that language learning is a socially mediated process. Mediation is a fundamental principle and language is a cultural artifact that mediates social and psychological activities. “From a social-cultural perspective, children’s early language learning arises from processes of meaning-making in collaborative activity with other members of a given culture” (Mitchell and Myles, 2004:200). Lantolf and Thorne (2007) defend that the principles of the SCT can also apply to SLA. They explain that “SCT is grounded in a perspective that does not separate the individual from the social and in fact argues that the individual emerges from social interaction and as such is

always fundamentally a social being” (p. 217-8). It is in the social world that the language learners observe others using language and imitate them. It is also with the collaboration of other social actors that language learners move from one stage to another.

Despite all the research on second or foreign language acquisition, we still do not know how languages are learned. It is difficult to reject any of the aforementioned theories as all of them seem reasonable albeit but they also seem incomplete, as they do not describe the whole SLA phenomenon, but just parts of a whole. Researchers keep investigating the phenomenon, but my contention is that all the works so far have limited their scope to specific aspects of language acquisition, guided by limited concepts of language while ignoring several other elements of SLA system which are in constant interaction during one’s acquisition process.

Language learning, like any other type of learning, is not a linear process and therefore cannot be deemed as predictable as some of these models of acquisition have hypothesized it to be. Minimal differences in initial conditions can cause very different results. Nevertheless, I consider that the previous attempts to explain SLA should not be disregarded, because when they are put together they provide a broader and deeper view of the SLA phenomenon. In this new perspective, a SLA model should be considered as a set of connections within a dynamic system that moves in the direction of the “edge of chaos” considered as a zone of creativity with the maximum potential for learning.

3. Chaos as a new metaphor

One of the most promising scientific theories borrowed its name from one Greek Myth – Chaos. Chaos was the initial state, the total emptiness, the nothingness, the non-existence from which emerged the universe. According to Leadbetter (1997),

Chaos has been described as the great void of emptiness within the universe from which Eros came and it was he who gave divine order and also perfected all things. In later times it was written that Chaos was a confused shapeless mass from which the universe was developed into a cosmos, or harmonious order. For instance, Hesiod's *Theogony* says that Erebus and Black Night (Nyx) were born of Chaos, and Ovid the Roman writer described Chaos as an unordered and formless primordial mass. The first *Metomorphoses* reads, "rather a crude and indigested mass, a lifeless lump, unfashioned and unframed, of jarring seeds and justly

Chaos named." The Roman writer Ovid gave Chaos its modern meaning; that of an unordered and formless primordial mass.

As the universe emerges out of the emptiness, we can infer that this emptiness is only apparent. The idea of a state unpredictably evolving with time present in the Greek myth is also the main principle of Chaos theory. Chaos is a new metaphor which changes radically the way we can see the world and everything in it. It is a substitute for the Newtonian metaphor of the clockwork predictability as put by Waldrop (1993). Instead of explaining the world as a clock governed by simple rules, it can be described as "a kaleidoscope: the world is a matter of patterns that change, that partly repeat, but never quite repeat, that are always new and different" (Waldrop, 1993, p. 330).

Chaos theory and the studies on complexity have been influencing many different research fields, including Applied Linguistics. After a seminal article by Larsen-Freeman (1977), we also started seeing acquisition as a random dynamic emergent phenomenon which is essentially complex and non-linear. Larsen-Freeman (1997) sees "many striking similarities between the new science of chaos/complexity and language and SLA" (p.141). She presents several arguments for the understanding of language and SLA as complex, non-linear dynamic phenomena, dynamic meaning growth and change. Larsen-Freeman (2000) sees complexity as "a metaphorical lens through which diverse perspectives can be accommodated, indeed integrated"(p.173). More recently, Larsen-Freeman and Cameron (2008) offered the Applied Linguistics field a sound work on this 'new science', translating their understanding of complexity into our field and sharing their insights with the readers.

3. Second language acquisition as a chaotic/complex system

Thornbury (2001) argues that language and language learning share some features with other complex systems. It is dynamic and non-linear; adaptive and feedback sensitive; self-organizing; and emergent. He observes that

(...) the learner's grammar restructures itself as it responds to incoming data. There seems to be periods of little change alternating with periods of a great deal of flux and variability, and even some backsliding. In this way, process grammars are not unlike other complex systems which fluctuate between chaotic states and states of relative stability". (p. 48)

There is evidence to support the claim that SLA is a complex adaptive system due to its inherent ability to adapt to different conditions present in both internal and external environments. As pointed out by van Lier (1996:170), “we can neither claim that learning is caused by environmental stimuli (the behaviorist position) nor that it is genetically determined (the innatist position). Rather, learning is the result of complex (and contingent) interactions between individual and environment”.

A complex model can accommodate apparently opposed elements in an effort to explain SLA. At the same time it admits the existence of **innate mental structures** and the individual capacity to learn more than what he finds in input, it sustains that part of the language is acquired by means of repetition and the creation of **automatic linguistic habits**. It acknowledges the importance of language **affiliation**², understood as the level of relationship between the learner and the second language. Cultural or personal affiliations with the second language work as a potent fuel to move the SLA system. **Input, interaction** and **output** are considered of paramount importance for language acquisition triggering both **neural connections** and **sociocultural mediation**. Each component works as a subsystem embedded in the SLA system. Figure 1 partially³ describes the way I see SLA.

In this SLA perspective, language must be understood as a non-linear dynamic system, made up of interrelated bio-cognitive, sociocultural, historical and political elements, which enable us to think and act in society. Language is not a static object, but a system in constant movement and its interacting elements influence and are influenced by each other. As language is in evolution, so too is SLA. It develops through dynamic and constant interaction among the subsystems, and alternating moments of stability with moments of turbulence and any change in a subsystem, can affect other elements in the network. As complex systems are in constant movement, after chaos, understood here as the optimal moment for learning, a new order arises, not as a final static product, but as a process, i.e., something in constant evolution.

² Instead of acculturation, I prefer affiliation due to the derogatory meaning of the first term.

³ The representation is partial because many other factors (e.g. motivation, learning strategies, political constraints, etc.) are in interaction in a SLA system and are not represented in figure 1.

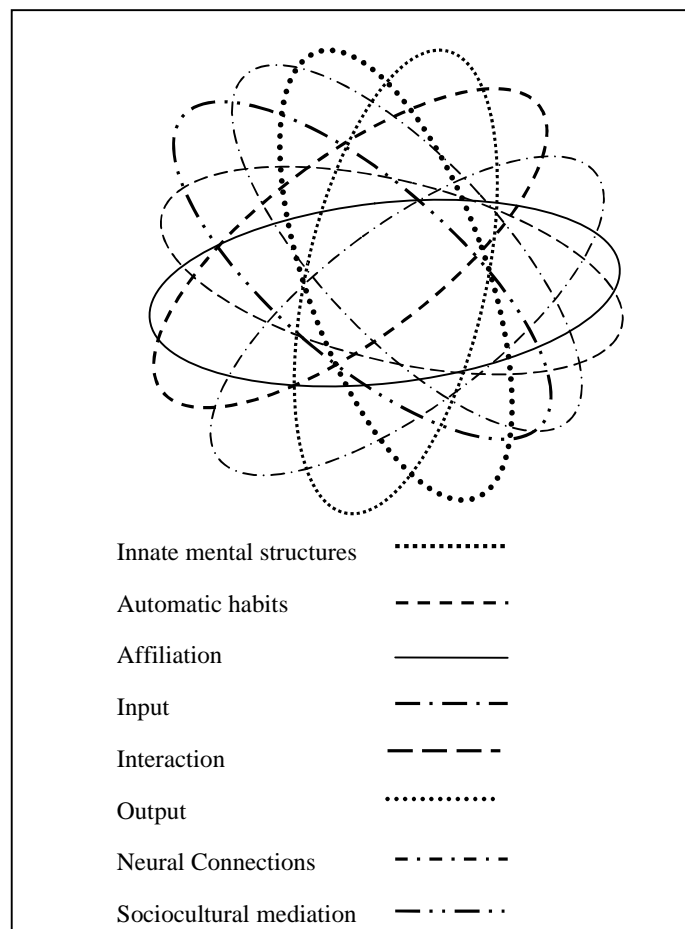


Fig.1 Second Language acquisition as a complex system

Human beings are different, their contexts are different and so are SLA processes. SLA processes are mediated by different human agents and cultural artifacts and unequal learning experiences may occur in similar situations. When we turn our observation to language teaching practices, we see that no matter how much teachers plan and develop their classes, students will react in different ways and unforeseen events will inevitably be part of their learning experiences. The seemingly orderly world of acquisition is in fact chaotic and chaos seems to be fundamental in such a process.

Out of chaos emerges a new language which is a product of all the elements involved in the process, and which can be placed in a cline which has first and second language as two opposing poles (energies or forces), the first language being the initial

condition for SLA⁴. The first and second languages⁵ work as attractors. An attractor is “a region of a system into which the system tends to move” (Larsen-Freeman and Cameron, 2008:50) and language development swings between these two poles. The language learner is first attracted to native language and then to second language and in his/her attempt to acquire the new language, he/she is attracted or repelled by one of these poles and out of this cycle of attraction and repelling emerges a third, namely, interlanguage, understood as a dynamic synthesis coming out of these two competing forces. Interlanguage works as a strange attractor, highly sensitive to initial conditions. Small changes in the initial conditions result in unpredictable shifts in language development. Each interlanguage phase yields similar but never identical patterns or strange attractors.

Velve, Greer, Deirdre & Escott-Stum (2002, p.1) state that “[c]haos theory attempts to understand the underlying order in processes that appear to not have any guidelines or principles. These processes typically involve the interaction of several elements over time.” In fact, a complex system consists of a network of elements in a process of continuous and dynamic interaction, influencing and being influenced by each other.

Acquisition seems to be one of those systems. We hypothesize that it consists of a relationship between both individual and social factors put into movement by inner and social processes. The random interaction among all the elements of the acquisition system yields the changes responsible for acquisition. The rate of change, that is, of acquisition is not predictable and varies according to the nature of the interactions among all the elements of the system. A live acquisition system is always in movement and never reaches equilibrium, although it undergoes periods of more or less stability.

3. Language learning histories and SLA theories

In this section, I will provide some empirical evidence for acquisition as a chaotic/complex system. In order to do that, I will resort to a corpus of English language learning histories (LLHs) written by Brazilian, Japanese and Finnish students (see <http://www.veramenezes.com/amfale.htm>).

⁴ We must acknowledge that children may acquire two languages at the same time, but in this paper my focus is learning a second language after the acquisition of mother tongue.

⁵ First and second languages are both live complex systems and they change over time. Larsen-Freeman and Cameron (2008:96) explain that “we change a language by using it”.

As pointed out by Larsen-Freeman (2000, p. 169), language learners have been seen from an etic perspective. In working with language learning histories (LLHs) and listening to language learners', we aim at changing the etic perspective into an emic approach. In doing that, we try to make a shift from objectivism/subjectivism to experientialism as we can count on learners' experiences to understand how languages are learned.

In the first part I will present some LLHs to show some evidence for different SLA theories. Different reports highlight different ways of acquiring a SL, reinforcing our hypothesis that the theories represent part of the SLA processes.

Behaviorism is present in the LLHs of Japanese, Finnish and Brazilian students:

(1) I memorized even complex sentences. Though it was very hard, it was worth doing it. I could improve my English. My English record was excellent. But it was only a paper test. I did not study speaking at all. I was too busy to do it. (Japanese student)

(2) The grammar and the most basic and important words I've learned repeating them again and again. It was a good way to learn new language when I was a bit younger and schoolbooks were easier. (Finnish student)

(3) Not only had I started learning very early, but I was always very interested in music and at that time there was no MTV in Brazil, but, my father had business in the US and had to go there so often that he ended up getting an apartment. Therefore, he was always bringing me back tapes from the American MTV, which I watched one right after the other every day. I ended up memorizing most of them and I repeated the lines along with the hosts. My mother thought I was going crazy, but that trained my ears and improved my fluency.

These three students seem aware that repetition and memorization were important for their SLA. A different perspective can be inferred from the next narrative excerpt.

(4) I am still learning English, from the books I read, from the music I listen to, from the movies and TV series I watch (and I try to watch them without subtitles), and from all the unconscious (more than conscious) input I receive.

Example (4) leads us to Input Hypothesis and to UG as well. This Brazilian student is aware of the importance of input for SLA and of the mental processes which transform input into intake. The importance of input is also reported in (5) by a Chinese learning Portuguese in Brazil when he refers to mass media (soap operas, films and

newspapers). It is interesting to observe that the narrator talks about the courses he attended, but adds he has Brazilian friends to talk to. This reminds us of the interactionist theories and the importance of negotiating meaning and using the language to learn it. The sociocultural theory is also present in the mediation friends of the cultural artifacts.

(5) I study Portuguese at UFMG, intermediate 1 and intermediate 2 and I have taken the basic course. I have Brazilian friends; they always speak to me in Portuguese. I also read books in Portuguese, I watch the soap operas, I watch films. I also read newspaper. That's all.

Connectionism can be exemplified by (6) and (7).

(6) I developed a system to learn vocabulary. I looked for all the words with the same roots and learned them together, like this: employ, employment, unemployment, employer, employee, etc. I compared the words in both Portuguese and English dictionaries to understand their meanings.

(7) I started learning from my direct contact with the United States culture, mainly comics and movies . By making free association with cognates and by looking up words in the dictionary , I learned words and expressions. Later, the frequent use of videogames forced me to learn more in order to play them adequately.

In (6) and (7) the narrators refer to mental connections and we can also see the importance of the mediation of cultural artifacts (comic, cinema, videogames) and that leads us not only to the input hypothesis, but also to the sociocultural theory.

Affiliations to the language and to the United States or England are found in different narratives. In (8), the reader can see an excerpt from the LLH of a very proficient teacher who learned English⁶ in Brazil. It was taken from a very long narrative which portrays a very successful English teacher with native-speaker pronunciation.

(8) My objective, however, was very clear as a child: I wanted to be American. I used to think to myself since I couldn't actually be American, 'cause I was born in the 'wrong' place, I wanted to be as close to that as I could be.

⁶ Most of the narratives are told by English language learners, but affiliation is also found in narratives of foreigners learning Portuguese in Brazil.

All these stories reveal that neither the theories nor the LLHs can explain the whole SLA process, but they make us aware that SLA is not a homogeneous process and that unpredictability is an important factor underlying it.

The edge of chaos

Order and chaos coexist in a dynamic tension. According to Ockerman (1997), the system is capable of remarkable things when operating in the narrow zone between order and chaos which is called “edge of chaos”. Ockerman explains that

The edge of chaos is a paradoxical state, a spiral chance between order and chaos, a humming oscillation between the two extremes, characterized by risk, exploration, experimentation. Here is where the system operates at its highest level of functioning, where the information processing takes place, where risks are taken and new behavior is tried out. And when new behavior emerges that is somehow beneficial to the system, where the system’s primary task and operating rules are modified in such a way that the system’s overall levels of “fitness” is improved relative to other systems, we say that the change is innovative; the system has learned or evolved. (p.222)

Ockerman adds that

There are five factors, or control parameters, that determine whether a system can move into the edge of chaos (or beyond into disintegration): the rate of information flow, the degree of diversity, the richness of connectivity, the level of contained anxiety, and the degree of power differentials. In human systems, these factors combine into a kind of creative tension where people are linked to others in paradoxical relationships of cooperation/competition, inspiration/anxiety, and compliance/individuality (group of initiative to illustrate the process) (p.222)

In an attempt to apply those five factors to SLA, we might regard them as the rate of exposure to the target language, the diversity of authentic input, the richness of interactions, the low level of anxiety, and the rate of autonomy or control of one's own learning.

In our corpus of language learning narratives, there is enough evidence to say that learners are led to the edge of chaos by factors which are not usually described as part of the educational context. One of our narrators, for instance, reports how skateboard competitions offered him relevant experiences with the English language. I understand it was the passport for the edge of chaos. He says:

(9) My first contact with English happened in 1987, when I was eleven years old. It was an English course in my neighborhood. Actually it was just an introductory course, really focused on basic English. The classroom activities followed a traditional method, by using non authentic materials, and teacher centered all the time. Then I went to high school, where English classes are simply awful. Every year the same subjects were taught to us, such as verb to be, negative forms, interrogative forms etc. However, the sport I have been practicing from that period so far is full of English words and expressions, what made me more interested in English. In fact skateboard has been a 'catapult' to my English learning process. It is common to meet native English speakers in skateboard contests, so I had to communicate with them in order to comment the contest, or even about my turn in it, for instance. This first steps were then, related to communicative learning process, since real use of language was required in order to communicate. Slangs and jargons were used all the time, and I did not know what exactly they meant, but I could get their meaning through the context we were in. After that, my interest have increased in many aspects of English, such as music, art and sports, what is just the continuity of the process that I began with when I was a child.

Narrative (9) exemplifies a recurrent pattern in EFL learning in Brazil. Narrators usually portray language learning in school⁷ as a dull experience which deals with impoverished input and focus mainly on grammar as shown in (10) and then they talk about another experience which shows the SLA system in its highest level of functioning, as in (9), represented by the learner's interactions with his skateboard peers. See another example:

⁷ In Brazil, when students refer to schools, they refer to regular schools and not to private institutions which offer only language courses.

(10) I was fifteen years old when I started to study English on high school. I didn't have the opportunity to study in English school. The teaching was traditional, based in the structural approach. It was teacher-centered. Students didn't speak in class, only the teacher. Learners had afraid to make errors. The course was more focused on grammar rules, syntactic constructions, repetition of words and sentences and so on. The class was addressed in straight line - teacher and student, student and teacher, we didn't have activities that made possible a larger integration among the students. There was not pair work or group work. Activities of listening or speaking were not common. The class used to emphasize activities of writing and reading. We weren't stimulated to express our own ideas, feelings, attitudes, desires and needs. Classroom materials and activities also weren't authentic. They didn't reflect real-life situations and demands.

In spite of a recurrent claim that language learning in schools is a poor experience, our corpus also offers some positive examples. Some narrators describe rich experiences in school, as we can see in (11).

(11) There were classes with 8 students, and 5 days a week, 3 hours a day. We used to talk in English all the time, even outside the class. On this course, writing skill was not very well explored. The professor was a kind of mediator, correcting mistakes and making conversation go on. We used to watch videos with native speakers to learn accent and cultural environment, and every Friday we used to listen to music, fulfilling gaps, trying to understand the meanings by the context.

Different experiences can move the system towards SLA. In (9), the rate of exposure to the target language and the diversity of authentic input were augmented in skateboard competitions. The learner is in control of his own learning and rich interactions are provided by this new context. We can infer that anxiety is low as he seems to enjoy this kind of experience. This example proves that his the acquisition system is open, i.e, it is not predictable and new elements may enter the system and transform it. In (11), the school also offers a good amount of authentic and diverse input and it seems to be enough for that narrator.

Kirshbaum (2002) explains that

the unpredictability that is thus inherent in the natural evolution of complex systems then can yield results that are totally **unpredictable** based on knowledge of the original conditions. Such unpredictable

results are called emergent properties. Emergent properties thus show how complex systems are inherently creative ones.

Unpredictability is found in many LLHs. One student registers that her SLA was all of a sudden augmented because she had to move to the USA to help a cousin take care of her baby. Another narrator considers that his SLA was triggered by a Brazilian TV program teaching English through songs, etc.

Self-organization is another characteristic of complex systems. Larsen-Freeman and Cameron (2008:59) explain that

Sometimes self-organization leads to new phenomena on a different scale or level, a process called ‘emergence’. What emerges as a result of phase shift is something different from before: a whole that is more than the sum of its parts and that cannot be explained reductively through the activity of the component parts.

The LLHs indicate that a phase shift is achieved when students look for experiences outside their schools in order to overcome the lack of the necessary conditions for SLA in school and a new order, or new interlanguage phase emerges. This new phase is more than the sum of school activities and experiences outside school. When reading those LLHs, one realizes that the rate of exposure to the language can be increased by means of cultural artifacts – television, radio, press, CD and DVD players, computers, movies, magazines, newspapers, music, on-line interaction – in addition to face-to-face interaction, mainly with proficient SL speakers. Some of these experiences are reported in (12), (13), and (14) and we can conclude that the narrators are aware that a new level of interlanguage organization, higher than the previous one, emerged from those social practices.

(12) The one thing that helped me through my learning experience and later on to improve my English were the books. The time I was learning there was no cable TV and no SAP on TV. So reading books and magazine in English were what kept me connected to the language outside the classroom.

(13) I just could improve my English, mainly my oral skills, by studying on my own, through songs, movies and cartoons.

(14) I continued studying by myself and at school, until I got a wonderful opportunity: I started working as a receptionist in private language school. I could study for free as I was an employee there. I took a three years course there and, in my opinion, it had a lot to do with the

communicative approach. Classes were very communicative and student-centered; varied materials were applied; there was a lot of interaction - we were usually encouraged to express our point of view and give personal exemplification.

Conclusion

Although only eight theories of SLA were revisited in this paper, they constitute a good example to reinforce my hypothesis that they represent different aspects of the same phenomenon. This hypothesis has been reinforced by the LLHs, which reveal that SLA is made up of automatic habits, unconscious processes, input, output, interaction, neural connections, affiliation and sociocultural mediations.

The LLHs imply that the diversity of input must not be limited to the language classroom. The edge of chaos will be reached if students can get rich input, interact with proficient speakers, and if they can use the second language for social purposes, dealing with different oral, written or digital genre in formal and informal contexts.

In our corpus of LLHs, there is enough evidence to say that learners are led to the edge of chaos by factors which are not usually described as part of the school context. After reading all these LLHs and observing language teaching in schools, we understand that formal educational contexts try to keep equilibrium and limit perturbations in order to keep the established order, teaching not the language itself, but about the language. By doing that, they deny the students the path to the edge of chaos. As Gilstrap (2005:58) points out “control mechanisms are firmly in place to preserve order, oftentimes leading to strict policies, rigid hierarchies, resistance to change, and maintenance of the status quo”. This lack of optimal conditions for language learning is overcome by the auto-organization of the SLA system. Teachers are not in control of their students’ acquisition processes and there will always be some space for autonomy empowering students to overcome the boundaries posed by the context.

Autonomy or control of one’s own learning is manifested in decision making by the language learners and by their ability to overcome social, economical and political constraints which limit their learning experiences. The dynamicity responsible for interlanguage development is achieved by the mediation of the SL cultural production and by learners’ experiences abroad or interactions with proficient speakers. These experiences disturb the order and cause the necessary turbulences to put SLA into movement.

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