PART 1

New Challenges in Language

Ethnography and Complexity in SLA Research

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1. Introduction

Ethnography as logic of inquiry (Green, Dixon and Zaharlick) has been regarded as theory and method to investigate educational phenomena within and across sites of literacy and first language studies (Green and Bloome). Concerning English as a Second Language (ESL) research, however, ethnography has been widely utilized as a means of collecting and analyzing data from classroom events (van Lier). The core of ethnography as logic of inquiry presupposes first and foremost that researchers take into account the multitude of social, cultural, political and economic complexities commonly found in the field of education. By the same token, ethnography as logic of inquiry has to carefully consider the complexities of the events under scrutiny, in a bid to represent reality as a complex, dynamic and mainly unpredictable system.

Given that in complex systems agents are "constantly acting and reacting to what the other agents are doing" (Larsen-Freeman, "Chaos" 143), this chapter aims to discuss some possibilities of interconnection between ethnography and complexity theory and its application to ESL research, besides being the first exploratory discussion of this subject in the field of ESL research in Brazil. The main focus here is to discuss some challenges involved in using ethnography as one methodological possibility for the application of complexity theory in ESL.

Traditional research characterizes itself for isolating parts of a specific phenomenon in order to study it, principally research orientations that take for granted specific phenomena without considering the influence of context and human agency on multiple possibilities of particular events and their relation to wider constructions of reality. Nevertheless, a new research attitude enables the researcher to view her/his research object as a complex system. Second language acquisition (SLA) and classroom culture are not different from several other human phenomena. They are also complex systems, comprised of different elements which interact among themselves, influencing and being influenced by other elements in the system. Davis and Sumara point out that classrooms are "open, self-organized systems that operate far from equilibrium" (25) and that learning should be "understood more in terms of ongoing renegotiations of the perceived boundary between personal knowing and collective knowledge" (27). They also remind us that complex systems are open as "they constantly exchange energy, matter, and information with their contexts. In the process, they affect the structures of both themselves and their environments" (14).

As complex systems agents are "constantly acting and reacting to what the other agents are doing" (Larsen-Freeman, "Chaos" 143), in order to understand language learning, we need a methodology which takes into account the multitude of social, cultural, political and economic complexities that (un)predictably emerge from the interaction in the field of education. It is our contention that ethnography as logic of inquiry is one potential option to study the complexities of the events under scrutiny, in an attempt to represent reality as a complex, dynamic and mainly unpredictable system.

In what follows, we face the challenge of presenting the first discussion of intermingling ethnography and complexity theory as complementary perspectives for the analysis of second language learning phenomena. Our intention stems from the challenge presented by Larsen-Freeman and Cameron, in which they posit that

> [a]s an idea like complexity spreads to fields *outside its origins in mathematics and science*, and as is used more widely, there is a broadening and loosening of theoretical commitments such as *defining criteria for categories*… For example, classification criteria for complex systems *in originating fields* are very explicit, whereas, for applications *outside of originating fields*, criteria seem to be "deliberately vague." (25, our emphasis)

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Consequently, the challenge we take up in this chapter is to explore further the interconnections between complexity theory and ethnography, having undoubtedly in mind that the preliminary discussion held here is the first step of a more systematically theorization in this direction. In order to work on this assumption we will present the characteristics of complex systems in section 2 and will discuss ethnography as a basis for understanding the complexities of SLA in section 3. Then we will present some conclusions with an eye to exploring this issue in a more systematic way in future research.

2. Some characteristics of a complex system

We take for granted that language learning is a complex system, as defended by Larsen-Freeman ("Chaos," "The Emergence") and Paiva ("Modelo"). The main characteristics of a complex system are dynamicity, non-linearity, adaptability, self-organization, and emergence.

Seldom, if ever, is the system in equilibrium, given that *dynamicity* is one of the main characteristics of a complex system. The system changes over time and so do its components. When learning a language, changes happen often as the result of feedback and the system adapts itself to the new environment, learning from its experience. The changes are non-linear as the effect is not necessarily proportional to the cause. They are, in fact, chaotic. The system is apparently disordered, although there is an underlying order in this apparent disorder. Nothing is determined or predictable.

Another feature of such a system is thus *non-linearity*. Apparently, there are no causal relationships to explain how learners learn to interact in a language, or why they acquire certain features of the language and not others. Unpredictability seems to govern this kind of system. Kirshbaum explains that

> the unpredictability that is thus inherent in the natural evolution of complex systems 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.

The complex systems are creative and the essence of creativity is unpredictability. Humans, for instance, are unpredictable learners and this characteristic gives rise to the emergence of creative learning experiences.

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Emergence can be understood, according to Johnson, as "what happens when the whole is smarter than the sum of the parts." To put it very bluntly, Holland explains that "the whole is indeed more than the sum of its parts" and we cannot understand the behavior of a whole system by "summing the behaviors of its constituent parts" (122). When researching human language learning, for example, one must consider that we cannot understand what it is by looking at isolated factors. Research on language tests, for instance, has shown limited information about the process-product relationship between how learners learn and the outcomes they produce from this learning. It is known that students' production varies substantially and differently according to the contexts from which they stem.

We need a methodology whose tools can identify the interconnectedness between the different instances of the same phenomenon. With respect to this position, we do believe that ethnography is one promising methodology to be adopted as an orienting procedure to investigate the complexity of specific communities of practice, being the second language classroom one of these communities. Larsen-Freeman and Cameron shed light on this assumption by explaining that

> The theory that we choose to work with, explicitly as researchers and perhaps implicitly as teachers, will dictate how we describe and investigate the world. It controls how we select, out of all that is possible, what to investigate or explain, what types of questions we ask, how data are collected, and what kinds of explanations of the data are considered valid.
> In deciding which type of data to collect, a complexity theory approach with its central focus on dynamics *requires us to look for change and for processes that lead to change*, rather for static, unchanging entities. (16, our emphasis)

In our view, ethnography is one means of capturing the changes that happen over time in specific communities of practice, since ethnography opens up multiple possibilities of understanding social phenomenon from an *emic*, or insider, perspective. By actively participating as members of the community studied, researchers are allowed to locate relevant social aspects and to make the complex web of relationships they observe and actually consider important to pinpoint.

Another characteristic of complex systems is *adaptability*, that is to say, the system capacity to reorganize itself in reaction to the interference

of external agents. This marked characteristic of the system leads the latter to self-organization, or the system's ability to search for organization whenever it has been disturbed by surrounding forces. Thornbury reminds us that

> systems that are left to themselves (closed systems) tend to run down – they move from order to stasis, just as an unwound clock will eventually stop. However, open systems – systems that are open to intake of new energy – may move in the opposite direction, evolving into more complex states. (49)

Changes and perturbations make the system work, so it gets increasingly more organized because of its own dynamics. By being adaptive, dynamic systems have the capacity to learn from experience and change. As the system evolves it increases in complexity and self-organizes itself.

There is enough evidence to argue that language learning is an adaptive complex system due to its inherent ability to adapt to the different conditions imposed upon it by individual as well as by environmental constraints inside and outside the classroom. Transforming oneself into a speaker of a second language is a complex process and implies changing from total order (speaking a first language) to chaos (irregular experiences with the second language). Chaos is defined as "a long time behavior of a dynamical system characterized by a great deal of irregularity"[1] and that is exactly what happens with SLA – a long time experience full of perturbations and irregularities as the learner tries to cope with this new linguistic behavior.

The evolving of a SLA system can be observed and analyzed if researchers utilize a methodology which permits constant observation, in order to systematically and clearly perceive the occurrence and re-occurrence of the changes in the system over a specific period of time.

It is our contention that ethnography can shed much light on the SLA process as it does not only focus on the product *per se*, but on the process as well, besides taking into account the parts of an event as possibilities of occurrences of the whole as well as other factors that influence the whole. That is, ethnography is a holistically oriented perspective to understanding human agency and the way humans interact in socio-cultural environments.

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[1] Glossary of Dynamical Systems Terms, available at http://mrb.niddk.nih.gov/glossary/glossary.html

3. Ethnography as logic of inquiry

The term ethnography comes from the Greek word *ethnos*, which means people or cultural group, and the term *graphia*, which means writing or representation of specific groups of people through writing (LeCompte and Priessle). The etymological definition of ethnography carries in itself the explanation of what an ethnographer is supposed to do – describe specific cultures and groups of people, be they exotic groups from different cultures or groups within the ethnographer's culture. Consequently, the ethnographic description of a culture does need long-term participation within the community investigated in order for the ethnographer to gain confidence from the people s/he analyzes and principally to build rapport (Spradley). Athanases and Heath, building on Talbert's view of an anthropological basis for ethnography, calls our attention to this long-term period of exploration by arguing that

> the discovery of cultural patterns [is] the primary goal of anthropology [and] long-term fieldwork in pursuit of that goal requires a period of at least a year of study and participant observation. The researcher becomes immersed in the culture as, at minimum, a "tolerated observed." The researcher engages in comparative science, using a relativistic view (treatment of language norms on their own terms), demonstrating sensitivity to context or the interrelated nature of social systems within which the culture under study is situated and the pursuit of complementary scholarly study to understand cultural patterns noted in the fieldwork. (267-68).

Cultural Anthropology has split ethnography into two interconnected characteristics, that is to say, ethnography as *product* – ethnographic writings and descriptions of particular cultures, and as *process* – techniques and methods of acquiring knowledge of specific groups or communities by using fieldwork and participant observation (Sanjek). Albeit the product of ethnography is the main aim of any research conducted by ethnographic principles of knowledge and cultural description, the processes of entering into the field, participating as an in-group member *inserted* in the community studied, building rapport, and exploring culture as the representation of the community under analysis are in fact the core of ethnography as logic of inquiry. By doing so, the researcher becomes part of the complexity of

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the culture under investigation, with the intention to allow her/himself to be influenced by the dynamics of the people studied as if s/he belonged to that community as a member. This participation allows possibilities of grasping the phenomenon under investigation in its entirety, by means of perceiving the dynamicity of the events, their non-linear evolving, and the emergence of unstable aspects that pervade the social phenomenon being chaotically constructed.

Ethnography as logic of inquiry has been considered one influential means of exploring and describing specific cultures and communities of practice within education. Intertwined views of classroom dynamics with wide ranges of social practices have been the core issue of school ethnography and its logic of investigation. According to Athanases and Heath,

> an ethnography can provide researchers, teachers, and other educators with rich documentation of learning as it unfolds and varies over time, leading potentially to insights into cultural patterns, formulation of hypotheses for testing, and support for generation of theory. (263)

The researcher can thus observe and at the same time be part of the dynamicity and self-organization of the system. According to Larsen-Freeman ("The Emergence"), complex events within the field of ESL can be "best appreciated by adopting a more emic perspective," that is, a perspective that transforms the researcher into a member of the community under analysis and into someone who takes part in the events of that community, being thus one contributor for its transformation as well as someone being transformed by eventual changes within the community (608).

Ethnographic research does not adopt isolated observation techniques *per se*, nor does it exclude the voices of the people investigated from its writings. On the contrary, ethnography requires full participation of the researcher in the culture of the "other" and appropriate registering within ethnographic products (reports, monographs, narratives and so forth) of the voices of the latter. The data are contextualized in a non-linear way and the researcher can see how everything is dynamically interconnected in a live unpredictable system. He or she can also view different levels of reality and different points of view. Chaos, in this aspect, becomes easier to grasp, given the multiple possibilities of experiencing the complexities of the phenomenon lived by both the members of the community and the researcher inserted in the same setting.

Likewise, ethnography leads to the metaphorical view of the ethnographer as a bridge which constantly fills the gap between what is already known about that culture and what is to be known about the dynamics of that culture as well. Green, Dixon and Zaharlick caution that

> [a]n observer who enters with a predefined checklist, predefined questions or hypotheses, or an observation scheme that defines, in an *a priori* manner, *all behaviors or events* that will be recorded is *not* engaging in ethnography, regardless of the length of observation or the reliability of the observation system. Further, if the observer does not draw on theories of culture to guide the choices of what is relevant to observe and record, or overlays his or her personal interpretation of the activity observed, they are not engaging in an ethnographic approach from an anthropological point of view.[2] (202, emphasis in the original)

In fact, predefined checklists may prevent the observer to grasp what emerges from the interaction among all the elements of the system that are inserted in that specific culture. One important but contentious conceptualization often cautiously approached by anthropologists is the uses of the term *culture*. The post-Boasian tradition of anthropological inquiry discusses as to which extent culture maps out individuals lives and social practices and vice-versa, given the fluidity of the term, which is due mostly to the multicultural and globalized world individuals live in (Barnard and Spencer). Far from coming to terms with the controversial definitions and applications of culture within Anthropology, the concept of culture we find rather appropriate and suitable to the purposes of this chapter is that of Frake:

> Culture is not simply a cognitive map that people acquire, in whole or in part, more or less accurately, and then learn to read. People are not just map-readers; they are map-makers. People are cast out into imperfectly charted, continually seas of everyday life. Mapping them out is a constant process resulting not in an individual cognitive map,

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[2] For a translated Portuguese version of this work, see Green, Dixon and Zaharlick ("A etnografia").

> but in a whole chart case of rough, improvised, continually revised sketch maps. Culture does not provide a cognitive map, but rather a set of principles for map making and navigation. Different cultures are like different schools of navigation designed to cope with different terrains and seas. (6-7)

The concept of culture adopted by Frake stands for the notion of dynamicity and instability, since culture, according to him, is an "improvised, continually revised sketch" that, we would add to that, responds to the unstable features of any social system, and which are constantly changing over time (6-7).

Taking into account educational research based upon a purely ethnographic logic of inquiry, Heath states clearly that some problems may arise as to what school setting seems mostly appropriate to be studied as well as an ethnographic research to be carried out. Given that an ethnographic-oriented research aims primarily at describing a specific culture and its multiple and dialectical forms of social dynamics, Heath argues that school settings are just one part of the breadth of sociohistorical features an ethnographer may encounter and perceive within a culture. Bearing this assumption in mind, Heath affirms that

> when formal schooling is the focus of research, anthropologists attempt to study it in relation to the broader cultural and community context in which it exists. For example, the behaviors of pupils are ideally viewed not only in relation to fit or contrast with those of teacher, typical student, or successful pupil, but also with respect to home and community enculturation patterns of pupils and teachers. (37)

What Heath attempts to show is the fact that ethnography in education, interpreted as logic of inquiry, may naturally lead to a juxtaposition of complex perspectives and procedures of investigation of the social dynamics under scrutiny that a unique perspective may not reveal. An example of this juxtaposition is Solsken's long-term ethnographic triangulation. Solsken contrasted one male student reading activities within different sites, more precisely, in his bedroom, during his family homework session, in the kindergarten and second grade class with a female teacher, and in his first grade class with a male teacher. Her research demonstrated that the student under analysis used to see literacy practices as women work only,

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given her mother and sisters habits of reading at home, which explains his literacy problems with the female teacher. On the other hand, when attending the first grade class with a male teacher, the boy has considerably improved his reading skills, since he realized that literacy is not only women work in general. By tracing the boy's literacy development within three years of analysis, Solsken was able to construct a picture of the student's reading improvement and its interconnections between school reading activities, home reading activities and self reading interests. The results Solsken has found are heavily due to her long-term research and the possibilities this ethnographic procedure has provided. Consequently, knowledge emerged from the complexity of the boy's culture. Had not Solsken actively participated in the boy's complex school and family cultures, the emergence of unstable and chaotic events surrounding the boy's literacy process would not have come to light.

As we have been discussing so far, ethnography as logic of inquiry has gained considerable ground in educational research, principally in the field of literacy (see, for instance, Castanheira, Castanheira et al., Green and Bloome, Green, Dixon and Zaharlick, Heath). However, according to Rodrigues-Júnior, in the field of second language teaching and learning in Brazil, ethnography has been used more as a tool or orientation to research method than as logic of investigation, since research has more generally focused on ways of collecting data from an ethnographic perspective than taking into consideration the ethnographic logic of inquiry that necessarily needs to lie behind the research. This common tendency mostly leads to a misinterpretation of the fundamental principles and scope of ethnography in the field of second language studies in Brazil (for a similar discussion in Anglo-American academy, see Watson-Gegeo).

4. Conclusion

Ethnography methodology is in accordance with the complexity science as it focuses on observation and description of several layers of adaptive, non-linear, self-organizing systems, that is, with learning systems. In language learning contexts, ethnography knowledge emerges out of the interaction of the array of data such as observation, field notes, narratives, interviews with teachers and students, video and audio recordings, transcripts,

etc. Besides that, the researcher is also seen as involved with the culture s/he studies. Davis and Sumara state that "complexity thinking helps us actually take on the work of trying to understand things while we are part of the things we are trying to understand" (16). When doing ethnography, the ethnographer tries to understand the phenomenon as involved with it and not detached from it. The researcher subjectivity is both present in his observations and field notes and s/he is also part of the research context. Thus, the researcher, on the one hand, affects and, on the other, is affected by the other elements of the culture under investigation. The research develops itself through the juxtaposition of complex perspectives and research tools, revealing aspects of multiple forms of social practices, such as intertwined views of classroom dynamics. This condition (or challenge) translates into practice what Larsen-Freeman and Cameron affirm about complexity theory: "It needs to be complemented with other, compatible, theories that together cover all that needs to be described and explained about the phenomena of interest" (17). We do believe, therefore, that ethnography is one compatible method and theory that can complement complexity theory and its focus of interest.

We assume that the field of SLA acquisition lacks research work which considers the broader culture in which the learner is integrated. A big challenge for ethnographic research is to go beyond the classroom setting since SLA does not only emerge from the confinements of classroom contexts. Experiences outside school are of paramount importance in the development of the new language as shown by narrative research (see Benson and Nunan, *Experience* and *Learner's*; Paiva, "Online"; Murphey, *Language* and *Language II*). If we examine most of the research reports which claim to use ethnographic methodology, we will realize that observations, videotaping, inter alia, usually show only what happens within a very specific culture, that is, the school. Nevertheless, if we consider SLA as a complex system, we will see that multiple cultures interact, affect and are affected by the emergence of a new language. We must go beyond the school walls in order to find out which communities of practice (see Wenger) the learners are engaged in, which imagined communities (see Murphey and Chen) they aspire to belong to, or which language experiences the learners have undergone in other settings than the classroom context *per se*.

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It is of crucial importance that researchers understand all the components of SLA as a complex system, and that poses a big challenge to researchers because hardly ever will a single researcher be able to investigate all those aspects. It seems that we need to operate with multidisciplinary groups in order to work into a more oriented complexity perspective. Finally, by interacting with different specialists we can learn more about the process of learning a language and collaboratively advance our knowledge on SLA.

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