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O desenvolvimento da interlíngua na aprendizagem de espanhol como língua estrangeira em Teletandem sob a ótica da Teoria da Complexidade

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ABSTRACT: This article presents, under the perspective of Complexity Theory, the characteristics of the learning process of Spanish as a foreign language in Teletandem. Data were collected from two pairs of Portuguese-Spanish interagents, who were engaged in a systematic and regular interaction, based on the tandem principles. It was found that the learning experience is developed with the peculiarities that arise from the context, agents, members and their nuances, which revealed the presence of a "shallow space" between the systems of native and foreign languages.

KEYWORDS: Complexity; Teletandem; interlanguage.

RESUMO: O artigo apresenta, sob o prisma da Teoria da Complexidade, as características do processo de aprendizagem de espanhol como língua estrangeira em Teletandem. Foram coletados dados de dois pares de interagentes português-espanhol, que travaram uma interação regular e sistemática, baseada nos princípios tandem. Verificou-se que a experiência de aprendizagem se desenvolve com peculiaridades decorrentes do contexto, agentes, elementos e suas nuanças, o que revelou a presença de um "espaço raso" entre o sistema da língua materna e o da língua estrangeira.

PALAVRAS-CHAVE: Complexidade; Teletandem; interlíngua.

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Introduction and explanations

Complex systems are characterized by non-linearity, self-regulation, sensitivity to initial conditions, self-adaptation and dynamicity (LARSEN-FREEMAN, 2007). In my Master's research (SILVA, A. C., 2008), even after noting that the Teletandem context is a determining factor to provide an instant feedback by enabling an interaction not simulated in real time which leads to a progress, it still remained a doubt about which factors could influence on the success of a partnership/learning experience.

The Complexity Theory seemed to be a holistic response to the process. The readings I have done about this scientific paradigm made me consider the existence of a theoretical explanation that includes the Teletandem as a contributing factor to the progress in an attempt to go beyond the cognitive versus social dichotomy. As stated by Diane Larsen-Freeman (2007), there is a duality of perspectives in Applied Linguistics (AL). Thus, I observe the Teletandem from the complexity perspective, considering this theory "as another way to reformulate the search for understanding" (LARSEN-FREEMAN, 2007, p. 782).

From this perspective, then, this article presents the Spanish learning process by Brazilians in Teletandem. Clearly, it is still believed that there is no need to learn this language since it is commonly recognized as very similar to Portuguese, almost sister languages. However, the proficiency in a language goes beyond the simple communication, given that it can influence the speaker's image and, including, generate interaction obstacles. Additionally, the increasing globalization also stimulates the proficiency in Spanish. Considering such justifications, it is verified in this article the characteristics of the Spanish learning process as a foreign language (FL) in the Teletandem context. The article is guided by the question: *How the Spanish learning process in Teletandem under the view of the Complexity Theory is characterized?*

First, I will present a brief theoretical overview followed by the methodological procedures. A data analysis comes next and, finally, I will present some considerations about what has been found up to now.

Theoretical foundations

The learning process in Teletandem

The technological process frequently presents to us new situations and products, immersing us in a constant learning process. The language teaching

and learning situation is one of the areas that should be more aligned with the globalization arising from the virtual world. This is because if teachers do not follow up on this evolution, they will usually be subject to labels, and worse, they may lose employment possibilities, given that the distance learning world is expanding each day.

The tandem method consists in periodic personal meetings in which there is a linguistic exchange between speakers from different languages. As affirmed by Maria Luisa Vassallo and João Antonio Telles (2006), "Tandem is a collaborative, autonomous and reciprocal learning method of a second language based on logical rules and common compromises. Basically, it consists in regular sessions of bilingual collaborative work for didactic purposes" (VASSALLO; TELLES, 2006, p. 84). Pursuant to Helmut Brammerts (2002), the goal of communication in tandem is the learning process. As the author points out, the technological resources available enable tandem to be taken by several learners.

Thus, with the technological advances, internet facilitated its virtual use. Among the projects that proposed its use is the Teletandem Brazil – foreign languages for all. Initially proposed by Prof. Dr. João Antonio Telles, it was supported by teachers from national and international universities and by Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP). The first goal was to put partners from different FLs together for mutual language exchange, using virtual synchronous communication tools (MSN Messenger, Skype, ooVoo). Nevertheless, during the research, there were several difficulties in engaging a prototypical interaction, which generated adjustments: interactions only with audio, video and chat or chat and audio. In order that the conversation was not reduced to a virtual chat, it was suggested that the meetings were based on topics. The session would have three stages: conversation, feedback and evaluation.

We must remember that, pursuant to the complexity theory, the context is not only the site of the learning process: it is shaped by events, delimiting them at the same time (LARSEN-FREEMAN; CAMERON, 2008). For this reason, to address all complexity evolving Teletandem, I defend that it is a virtual scenario of tandem experience with all nuances and peculiarities inherent and resulting from the complexity in the acquisition of languages.

Before the Teletandem experience, interactants should read a "manual" in order to get in touch with tandem principles and with suggestions for interactions. This scenario, then, characterizes the initial conditions of the

process. Andressa Carvalho da Silva (2008) found that to the interaction in Teletandem, in addition to tandem principles – reciprocity (mutual support of the partners), language separation (to practice just one language per meeting) and autonomy (learner should be responsible for directing his/her own learning and the partner's) – the equality of conditions (BENEDETTI, 2006) was also a principle to be followed. This is because, if the interactants do not have the same hardware and software resources, the interaction will not occur in a prototypical way.

Thus, the complexity in Teletandem is related to how the system will adapt itself to each partnership singularities. As problems arise, several adjustments will be carried out with respect to interactants – as a subsystem – or to the interaction process itself. Such factors, in a non-linear way, create the variability and dynamicity of the process which are, as mentioned above, characteristics inherent in a complex system.

The Language as a complex system

The complexity theory, more than just a model, is an attempt of reconciliation between several processes composing the learning process from the perspective that the whole is more than the sum of its parts. Larsen-Freeman (1997) considers that the proposal aims at crossing the dichotomous boundaries usually present in linguistics. In 2008, the author and Lynne Cameron proposed that the "verities" extracted from regularities should be tested. For them, the complexity theory observes how human beings shape the context and that the explanations for cause and effects are not suitable for this paradigm. The variation is the key point of the theory.

Therefore, the non-linear complex system is the basis. The initial conditions of the system exert a great influence over its unpredictability. Thus, the language would be a common organism that develops, grows and is, as any other non-linear system, complex since it has interdependent subcomponents (morphology, syntax, among others) (LARSEN-FREEMAN, 1997; PAIVA, 2009). The change in subsystems can interfere in others: the behavior of the whole results from the interaction between them and learning a language is not a linear process. The term reformulation, very used in AL, shows this characteristic as it occurs precisely because the system is sensitive to the feedback it receives (LARSEN-FREEMAN, 1997).

Larsen-Freeman (2007) points out that the challenge for researchers of the dynamic/complexity/chaos systems theory would be cultivate a dialectical

relationship between the whole and the parts in order to find appropriate units of analysis, which requires a great knowledge about what is being defined. Thus, emergentist systems focus on the perspective that the acquisition of language emerges from contextual needs and from the interaction agent/environment. The "language learning and language use are dynamic processes in which regularities and systems arise from the interaction of people, brains, selves, societies and cultures using languages" (ELLIS; LARSEN-FREEMAN, 2006, p. 577).

As stated by Vilson J. Leffa (2009), this is because the learning process is considered an open system where a teacher acts. So, by interacting with the student, the teacher can produce an effect that – under precise conditions for the modification of this system – will help students' learning process. Then, under favorable conditions, the system would be capable of regulating itself. We highlight that the complexity is not only to observe morphological, syntactic and phonological aspects: a complex system goes beyond other non-linguistic strata (psychological, contextual, etc.).

These characteristics impose dynamicity on the system. The changes that occurred would be the learning process itself triggered by the interaction. However, the reorganization of this system can present certain preferences related to either state. Systems change over time, leading to behaviors that are not only a sum of conducts of individual components: but result from the interactions with other agents. Systems have fractals which are "variables that may affect the system in unpredictable ways, […] links of a same chain of connections" (PAIVA, 2005, p. 30). Fractals, according to Larsen-Freeman and Cameron, "occur at the boundaries of attractor basins, where the system is poised in a critical state at the edge of chaos, like the sand pile just before it collapses" (LARSEN-FREEMAN; CAMERON, 2008, p. 63) and they clarify that in order to "characterize the use of the language as a fractal, it must have properties that apply at all levels" (LARSEN-FREEMAN; CAMERON, 2008, p. 110).

The authors describe, based on the metaphorical use of topographic and spatial images, the landscape condition of a complex system as a representation of a state space. It is a collection of potential conditions of a system. Each point is described in a particular group of parameter values, including not only the conditions that may occur, but also those which are not and may never be manifested: it is possible, in practice, that the system is not present in all potential conditions.

Complex systems have control parameters that would be patterns capable to affect its trajectory and, so, to influence especially the transitional phases.

Accordingly, changes occurring in these "guidelines" displace the system to other regions of its phase space, controlling the potential states that a system can occupy (LARSEN-FREEMAN; CAMERON, 2008, p. 53). So, it can be described the so-called preferences of a system in a landscape of possibilities, the attractors: regions into which the system tends to move. As the system changes, presenting a new behavior or attractor state, the "ball" (metaphorical representation of the system) moves towards a valley into a landscape. For this reason attractors have the strength to produce the order in a dynamic system by constraining the system into a certain region of its space-state-landscape. As valleys may be shallow or deep, the greatest depth will require more energy so that the "ball" moves. There is stability in the resistance to external disturbances: a stable system will not change its landscape simply due to a "push".

Systems always have co-adaptation processes. These processes, according to Larsen-Freeman and Cameron (2008), would be a type of mutual causality in which changes in a system result in changes in others and so forth. The interaction between native/non-native is an example: the speech adapts itself in order to be understood and the listener, on the other hand, adjusts the response in order to facilitate communication. With respect to the nature of the context, there is a change: it is included physical, social, cognitive and cultural aspects, which are inherent in the system. For this reason contextual factors should be seen as dimensions/parameters of the system. As systems adapt to context shifts, its dynamic change is referred to as soft assembly (LARSEN-FREEMAN; CAMERON, 2008).

These soft assemblies are the basis for this emerging change. For this reason attractors arise from adaptive experiences occurred in the context, leading to a higher level of social organization. Any linguistic activity may be responsible for these subtle assemblies (verbal/non-verbal production activities). Thus, these factors will be necessarily present in the development of interlanguage (IL).

The interlanguage: an attractor in the landscape

It should be noted that studies of IL were highlighted by the article "Interlanguage", published by Larry Selinker (1972). Nevertheless, there were several nomenclatures and concepts that tried to describe the same phenomenon. Silva, A. C. (2008), after studies of interactants' interlanguage in Teletandem, defines it as "the continuous restructuring of a highly complex and idiosyncratic system, as it presents a scope in two languages, but it results in another one that is

tangential to those and that develops itself in an elastic and systematic way" (SILVA, A. C., 2008, p. 87).

For Paiva, the new (complexity) perspective

> can reconcile "nature" and "nurture" as the learner can be seen as an individual with his/her cognitive capacities and at the same time as an agent who is in interaction with the other elements of the environment. [...] learning initial conditions are chaotic, and two opposing forces – first and second language – give birth to a third, the individual interlanguage (PAIVA, 2009, p. 4).

For these reasons, the initial conditions of the system are important for the understanding and analysis of the IL: previous experiences influence or determine the behaviors of the system. Nick C. Ellis (2007) draws a parallel between theories of the second language (L2) acquisition and IL studies. For the author, both are stages of a dynamic and complex system. Thus, the recognition of the L2 acquisition as an emergent process marks the beginning of a new era in AL studies. In the IL, generalizations and statistical abstractions characterizing personal growth are verified, and, for this reason, the variability should be observed. Nevertheless, Ellis emphasizes the latent need to explain regularities as well. If there is no device, any feasible alternative should be sought to explain why common patterns of development in different kinds of learners under diverse conditions may occur. In 2008, Ellis argued that, by considering the language as a dynamic system, the ecological interaction between many agents should be observed – there are different agents/human groups/periods. There is no anarchy or chaos, but dynamic patterns of use that manifest themselves, leading to a complex and adaptive systematization.

That is why Larsen-Freeman and Cameron (2008) presume that the previous language experience, normally referred to as transfer, produces multiple effects on the FL learning process. There are many factors that interfere among which the typological proximity of the languages being used – which is relevant for this work once it focus on the Spanish learning process by Portuguese speakers – as well as the speakers' perception related to this proximity. In complexity,

> learning is not the taking in of linguistic forms by learners, but the constant adaptation and enactment of language-using patterns in the service of meaning-making in response to the affordances that emerge in a dynamic communicative situation which is, in turn, affected by learners' adaptability (LARSEN-FREEMAN; CAMERON, 2008, p. 135).

For Philip Herdina and Ulrike Jessner (2002), the transfer is generally taken to mean the transfer of the same structures from L1 to L2 (that may have positive or negative effects on the learning process). Interference would refer to those phenomena which are not reducible to either of language systems involved, but it is related to the language processing, rather than language structure. Both are included in the concept of cross-linguistic interaction. Like systems, feedback is also non-linear once it embodies an essential tension between order and chaos. For this reason, it can turn the simplest activity into the complex efflorescence of a fireworks display, creating qualitative changes that characterize non-linear and complex systems. According to Herdina and Jessner (2002), nowadays researchers feel the futility of studying parts in isolation from the whole in the most of sciences. This happens because order, chaos, complexity and wholeness are all tied together: complex systems, both chaotic and orderly ones, are irreducible into parts because each element is folded into each other by feedback and iterations.

It must be added that a number of factors determine systems stability which depends on the condition of the language system (in transition or relatively stable). The speaker's expectations concerning future language requirements have an effect on the stability, as well as the proximity of the systems involved, given that it is defined as a function of the competition between systems (which affects the degree of interference). This is because

> the closer the levels of both systems are to each other, the greater the degree of interference to be expected as systems integrity is threatened by the degree of proximity. Transfer on the other hand is defined as a function of the distance between the two (or more) systems [...] transfer will therefore be reduced by an increased proximity of the systems (HERDINA; JESSNER, 2002, p. 133).

Thus, as stated by Larsen-Freeman and Cameron (2008), it is extremely important to observe the initial conditions of the system: the previous language experience will always affect and shape the current experience in several significant ways. In complexity, the transfer is defined as the interference by the prior knowledge of a certain language in the FL experience, being it the first, second, third and fourth language. Each time a new system is learned, the greater the dynamicity between existing systems, the more complex the system will be (LARSEN-FREEMAN; CAMERON, 2008).

Methodological procedures

For this research, ethnographic approaches were used insofar as it enables a detailed examination of the holistic nature of the phenomenon observed (AGAR, 2004). It was also used the principles of virtual ethnography by Hine, who considers that "the signification of a technology does not exist prior to the uses attributable to it, but it arises during its use" (HINE, 2000, p. 42).

This particularity highlights the dynamic and complex nature. In Teletandem, the situation results from the paradigm shift falling directly and indirectly upon the social practices previously conceived by man. As states Valdir Silva (2008), a new space is built, the cyberspace, where the man establishes new expansions of his social activity, creating new social relationships with specific structures and codes: it occurs the development and introduction of a new culture, the cyber culture, which requires researchers to adjust the ethnographic model "to this new reality due to natural effects produced by media" (SILVA, V., 2008, p. 107).

According to Zoltán Dörnyei (2009), the research under the view of the complexity can benefit from the qualitative methodology that characterizes this investigation. The system is highly changeable and due to the difficulty to list with mathematical precision all variables, an overview of the system operation can be done by observing data in their quality and, in this case, by triangulating them (BURNS, 1999).

The context of this research is the interaction in Teletandem between Portuguese-Spanish Teletandem pairs who met virtually. In the beginning of the Project (mid-2006), the partnership was established between college students related to language teaching. However, subsequently, this continued to be the focus with respect to Brazilian students, but the foreign interactants did not need to attend teaching and education courses. Before interaction, students are required to read a "manual" with suggestions for Teletandem practice.[1] For this article, two pairs reflecting different moments of the development of the project are analyzed: 1) Dani-Julio; 2) Cláudio-Eros.

Dani, the Brazilian interactant, studied Letters at a public university in the countryside of São Paulo. When she participated in Teletandem (2009), she was attending the second year at college. Julio has a graduate degree in informatics and he did the interactions parallel to his work – which were made in his workplace. Dani took the sessions at the Teletandem laboratory where

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[1] www.teletandembrasil.org

she worked as a monitor. She was also engaged in an academic internship program in which the interactions were the corpus. The mediation, established by me, was done every three or four weeks of interactions.

Cláudio, during his interactions (2011), was a student of the fourth year of Letters-Translation from a public university in the countryside of São Paulo. Eros, on his turn, is a food engineer and he was interested in Portuguese because he was pursuing a scholarship to obtain his Master's in Brazil. Cláudio and Eros took the interactions at their residences. For Cláudio, the interactions aimed at meeting all requirements of the language learning process: to interact and to reflect on his interactions. When I had access to the data, I prepared a mediation that unfortunately did not occur because the pair did not take any session.

The research tools are a) emails between partners; b) interactions; c) written interaction reports; d) mediation; and e) interview. The material collected from these varied instruments enabled the triangulation of data in order to observe the system.

According to Larsen-Freeman and Cameron (2008), in data analysis under the view of the complexity in AL, it is necessary to identify the components of the system, the human and social organization levels where they act, relationships within and among elements and the adaptation and dynamics of change. For this reason, firstly it has been made a previous reading in order to identify the components of the complex system Teletandem: it was found that each participant, despite being in different moments of development of the project, could be simultaneously deemed an agent and a subsystem of the larger system (Teletandem). Then, it was carried out a description and analysis of the initial conditions and of the characteristics inherent to this context and its influence on the learning process in Teletandem. Thus, the system of interaction and the learning process were observed during this work by mapping the IL and describing the complex (sub)systems in Teletandem.

The complexity in the interaction in Teletandem

Complex systems are sensitive to initial conditions: small changes can generate highly distinct organizations. Clearly, it is not possible to delimit ad hoc initial conditions, given that the systems involved already have a self-organization. Thus, on the subject of initial conditions means to observe the beginning of Teletandem process: who are the participants, their motivation, negotiation of learning, among other. Additionally, as affirmed by Liliane Assis S. Resende (2009), what establishes the appearance of different patterns in the

system is not usually related to initial conditions, but is also deeply related to the critical point where the system is located.

Based on each participant's self-organization, firstly the partners' characteristics were presented, and even if deemed the same initial conditions, they reveal small changes that influence all the process. Then, the IL of Brazilian participants learning Spanish in Teletandem is characterized as a complex system showing that, based on the topographic figure, valleys appear as shallow: almost waves in a plain.

Comparison between partnerships: a shallow space

The goal of this part of the article is not only to make a *strictu senso* comparison, but to compare data in order to explain that small changes in initial conditions may cause a great diversity in the system. For this reason it were listed the characteristics equally found in Dani and Cláudio, the Brazilian participants:

a) **Both interact in order to learn a FL**

Firstly, it is important to highlight that both had already studied another language or had been in contact with a FL before attending college, as verified in the interview:

> Interview with Dani through MSN chat – June 25th, 2009.
>
> Researcher: [...] do you speak another language (besides Spanish)?
> Dani: I speak English. [...]
> Researcher: how did you learn this language?...
> Dani: oh yeah, I started learning it in the 5th grade of elementary school because they taught English in my school, and so, when I was in the 6th grade, I started attending a language school. [...]
> Researcher: did you choose Letters because you like foreign languages?
> Dani: I intend to finish this course because I want to be an English teacher, so as I always liked foreign languages, I had always been in contact with it.
> Dani: Not only because I like foreign languages, but languages in general, including Portuguese.[2]

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[2] Pesquisadora: [...]. você sabe falar outra língua (além do espanhol)?
Dani: Falo inglês. [...]
Pesquisadora: como você aprendeu essa língua?...
Dani: ah sim! desde a 5º série do ensino fundamental porque tinha na escola em que eu estudava e quando eu estava na 6º série eu comecei fazer curso em escola de língua. [...]

Personal interview with Cláudio (June 9th, 2011)

Researcher: do you speak another language besides Spanish?
Cláudio: oh, English, right? […]
Researcher: how did you learn these languages… both English and Spanish?
Cláudio: you know… I started learning ENGLISH in the basic level, right? … when I was a kid… I've get along with the language a lot […] but I learnt Spanish some years before… in elementary school: And then in college [...]
Cláudio: oh, my motivation was… I have a lot of reasons to:: … want to learn English […] its economic importance, right? … importance … of the English in dominating academic environments/ but at that time I didn't know academic environments:[3]

The motivation, according to Larsen-Freeman and Cameron (2008), seems to be a parameter control in FL learning process. It can be noticed that both have studied English in regular schools. Nevertheless, only Cláudio mentions that he had learned Spanish. Another factor to be highlighted is the difference between objectives: Dani says she likes languages and Cláudio, on his turn, emphasizes the economic reasons and the language usage in academic environments. This means that Dani's motivation seems to be more properly intrinsic (DECI; RYAN, 2000 *apud* CAVENAGUI, 2009), as she affirms that she studies languages because she likes it. Cláudio, on his turn, seems to be motivated due to external and social factors, once the reported motivation arises from the need to communicate.

Pesquisadora: foi por gostar de línguas estrangeiras que decidiu fazer Letras?
Dani: pretendo terminar agora porque quero, também, dar aulas de inglês, então por gostar muito de línguas estrangeiras, sempre tive algum tipo de contato.
Dani: Não só por gostar de línguas estrangeiras, mas de línguas no geral, inclusive português.

[3] Pesquisadora: você sabe falar alguma língua além do espanhol?
Cláudio: ah/o inglês né? […]
Pesquisadora: e como é que você aprendeu essa língua … tanto o inglês quanto o espanhol?
Cláudio: olha … o INGLÊS eu comecei aprendendo no::/no nível básico né? … quando eu era criança … eu lidei muito com a língua […] agora o espanhol eu tive: alguns anos durantes os:: anos do ensino fundamental: E depois na faculdade mesmo […]
Cláudio: ah minha motivação foi … tenho muitos motivos pra:: … querer aprender o inglês […] importância econômica né? … importância … é:: da cultura da língua inglesa nos ambientes acadêmicos dominantes/ só que naquela época eu não tinha noção de ambientes acadêmicos:

b) **Both are engaged in courses where the proficiency in FLs is an important part of the education**

Dani took Letters course at university. Cláudio, on his turn, attended Translation. Although both courses deal with language studies, differences in profile and education cannot be disregarded. The approach carried out by the interactants trying to teach and to learn in Teletandem exposes it. This is because Dani, perhaps by being a trainee teacher, always focused on mediation performance. On the other hand, this meeting with the mediator never formally happened with Cláudio.

It is worth to mention that this difference may also come from the fact that Dani was in the second year at university while Cláudio was in the last one. Obviously both have duties to be accomplished; however, Cláudio always mentioned that he had to meet deadlines and there was a lot of work to do. That is to say, as each year requires certain behavior, these behaviors and/or agenda may have influenced the complex system.

c) **Both formally established the partnership**

Once Teletandem Brasil is a formal academic research project, it had a systematic of interactant establishment. Initially, Brazilian students expressed their interest in participating and learning one more FL. Thus, through contacting foreign universities, a researcher and/or teacher named a partner who wanted to learn Portuguese as a FL. It was recommended that the interactants visited Teletandem Brasil website in order to learn more about the project. Both interactants observed in this work followed this "systematic".

During face-to-face meetings, the guidelines were enhanced. For this reason, the mediator was usually there to explain the moments of the interaction (conversation, feedback and evaluation) and the principles to be complied with: autonomy, reciprocity and separation of languages (VASSALLO; TELLES, 2006). The mediation with Dani was established once her interaction period coincided with a moment I was attending a regular subject. For this reason, I was always present so that I could help her eventually. No formal mediation meetings were held with Cláudio due to schedule problems – we only had a few informal conversations about the partnership. On the day of the interview, we managed to have a brief mediator talk. This is also because of the short interaction period held between Cláudio and Eros, which was less than two months. Thus, it is hard to state whether the absence of mediation caused the death of Teletandem complex system between the interactants or the death of the system made the mediation impossible.

d) Both interacted virtually

Because it is a Teletandem, there was the assumption that the interaction happened virtually. In its prototype, it would be carried out via videoconference, with the support of a chat to discuss metalinguistic and negotiation matters. Nevertheless only one interaction between Dani and Julio was carried out that way. The others were held as chat. All interactions between Cláudio and Eros, on their turn, occurred via audio, but without video. Among them, the chat was carried out according to Teletandem Brasil initial proposal: an assistant tool for metalinguistic conversation:

Dani and Julio (Interaction via MSN, May 26, 2009)

Dani says: cómo? no compreendi , pero después tu me explicas
JULIO says: vas a aprender esplañol pero muy bien vas a ver
Dani says: GRACIAS
JULIO says: bueno cuidate
Dani says: jajajajajjajajaj
Dani says: tu también!

Cláudio and Eros (Interaction chat via Skype, April 26, 2011)

[26/04/2011 20:06:22] eros: universidad de antioquia
[26/04/2011 20:11:29] Cláudio: Estado de São Paulo
[26/04/2011 20:12:36] Cláudio: porta
[26/04/2011 20:14:29] Cláudio: Casas azuis
[26/04/2011 20:15:51] Cláudio: NE
[26/04/2011 20:15:57] Cláudio: Estados como:
[26/04/2011 20:16:02] Cláudio: Bahia
[26/04/2011 20:16:09] Cláudio: Rio Grande do Norte

As it can be observed, there are many marks of virtual written conversation in Dani and Julio's partnership: use of capital letters, exclamation marks and laughter reproductions. Between Cláudio and Eros, only vocabulary lists were presented: it was not the interaction environment itself, but a subpart of this environment, once it offered subsidies so that the interaction occurred. In complex terms, the chat between Cláudio and Eros is configured as an element and a subsystem inside the major Teletandem system.

However, both showed adaptation: as the system received external influences (usually arising from lack of isonomy of conditions), it was the self-regulation which drove the system to another delay status. As this status can be considered a Teletandem scale (virtual nature is present), it is assumed that

this adaptation reveals a fractal: the level/type does not matter, Teletandem features are present.

e) **Both were engaged to academic activities in which Teletandem was the corpus**

Brazilian interactants were commonly characterized by having an "academic utility" in their interactions, which places the system into an attractor status. Nevertheless the differences are listed in the purpose section, as well as in the differences aforesaid: each one was attending certain course at a different year and using the interactions for certain purpose.

In Dani's case, her interactions and reports were part of her internship corpus: there was a "formal" need in her interactions:

(Interaction via MSN, November 17, 2009)

Dani says: *no no, because this **is part of the internship** that I have to finish for university
JULIO says: *after finishing it you can dedicate more time to school
Dani says: *[…] formally our meetings must occur until 12/03 … but after that, if you want, we can talk without commitment and without appointment[4]

It can be noticed that the interactions could continue between them, but not systematically. From these data, it can be concluded that carrying out an academic activity was a control parameter (LARSEN-FREEMAN; CAMERON, 2008): once this was no longer necessary, the system would be led to another attractor state.

This external control parameter is observed in Cláudio's interactions. However, his academic activity consisted of gathering interactions to write reports in the role of student and teacher to meet an academic subject requirement. That makes him different from Dani in the sense that the initiative comes from a student in an internship. On the other hand, in an academic activity, the performance and evaluation criteria are usually provided by the teacher. The student is responsible for complying with them to "get a good grade". It is clear that this

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[4] Dani diz: *no no, porque **esto hace parte de mi estagio** que tengo que terminar en la universidad

JULIO diz: *en lo q terminas para q le dediques mas tiempo ala escuela

Dani diz: *[…] formalmente nuestros encuentros tienen que ir hasta 03/12 … pero después se quieres podemos hablar sin compomiso y sin hora marcada

parameter may not have been Cláudio's sole control parameter. However, meeting the requirements seems to have caused the "death" of the system:

(Email received by the researcher, August 2, 2011)

[...] I have not accounted the total time of my interactions yet. There are some lost minutes that I did not manage to record. Nevertheless **I believe that it will meet interaction time/number established by the teacher.**
As I am busy with other subject stuff and with PIBITI internship **I did not took the interactions.**[5]

Cláudio always met what has been established and, as there were many other tasks to be carried out, this one was abandoned: there was no "strength" to maintain the system once his attractor state was characterized by meeting academic activity. Therefore, it is concluded that the use of interactions for academic purposes was characterized as an external control parameter in both partnerships.

Cláudio's interlanguage as complex adaptive system

To go through with this part of the analysis, learner's difficulties were mapped with respect to language proficiency as they clarify the IL phase: for the mistakes, there is a materialization of hypotheses. Cláudio's system showed alternations with respect of pronoun usage:

(Audio interaction via Skype, May 3, 2011)

C: ok voy enviar**le**.. enviarlo o enviar**le**?
E: enviarlo… se dice enviarlo hace referencia al objeto que estás enviando…
C: ah sí .. voy enviar**lo** … **a lo**.. voy enviar.. voy enviár**selo**… puedo decir voy enviár**selo**? […]
E: no está muy bien enviárselo claro está perfecto
C: **he recibido la/ el mensaje?** … o no? …
E: por Skype?
C: si no hay yo voy a intentar enviar nuevamente (15s) no ha aparecido ninguna.. mensaje?
E: no no no ningún mensaje
C: ah yo puedo después enviár**selo** al correo electrónico

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[5] […] Ainda não contabilizei o horário total das minhas interações. Há alguns minutos perdidos que eu não consegui gravar. Mas mesmo assim **creio que atenderá ao tempo/número de interação estabelecido pela professora.**
Como eu estou ocupado com as coisas das outras disciplinas e com o estágio PIBITI **acabei deixando de interagir.**

It is observed that Cláudio firstly creates two hypotheses about the correct pronoun and asks his partner for help. Eros answers, adding a metalinguistic information. Then, Cláudio creates another hypothesis which is only confirmed. Forthwith Cláudio uses first-person pronoun to ask Eros (the right use would be a second/third-person pronoun) in "*he recebido la/el mensaje?*". In this excerpt, it can be noticed that he chose not to use the pronoun "*la*" to refer to the message, in addition to the self-regulation showed due to self-correcting. Cláudio's system still varies related to pronoun usage, and then he states "*voy a intentar enviar nuevamente*", without using *-selo*. On the other hand, Cláudio uses this form correctly in his last production.

This variation shows the complexity of IL: a system which walks through a landscape of hypotheses, ruled by control parameters and which has many attractors. When a correction or a confirmation is made, the hypothesis' stability happens, which, even confirmed, may produce no effect in other event, denoting the emergence of the complex system. It is highlighted that Cláudio has shown variability at using pronouns and genders since the beginning of the interactions:

(Audio interaction via Skype, May 3, 2012)

C: ah sí pero hacia mí ah/ eh/ no me gusta Roberto Carlos porque es de otro momento … Mi madre .. ah: .. suele oír**la**/ oirl**LO** oír**lo**

There was a self-correction followed by repetition (emphatic and conclusive, respectively). It seems that Cláudio, at restructuring, verbally explained the spaces of his system which are evidences of self-regulation, as Larsen-Freeman (1997) claims. As the system is sensitive to the feedback it receives, there is variability for the next interactions:

(Audio interaction via Skype, May 6, 2011)

E: entonces en la habla normal la gente lo diría lo trajeron de fiesta .. sino le llevaron de fiesta
C: ah: … **le** llevaron de fiesta …
E: lo llevaron de fiesta

(Audio interaction via Skype, May 6, 2011)

C: ok (3s) hice el reparo del ordenador ayer… **lo** hice: … ayer? Está correcto … esas dos
E: eh.. podría decir .. hice el reparo no no suena bien …podría decir re-paré el ordenador ayer
C: ah: reparé: .. el ordenador ayer .. y: … podría decir … **lo** reparé… […]
E: ah ya: … voy a darle un ejemplo … voy a hacerlo

C: voy a hacer**lo**

E: entonces … vas a reparar me equivoqué ahí es … hacerlo… entonces podrías decir… vas a reparar el computador.. sí voy a hacerlo

C: voy a hacer**lo** … **hicilo** … **hiciste lo** … es que por ejemplo ah: … FIZ .. es el equivalente para … hice … ah.. yo hice tú hiciste … tú hiciste él él hi/ hizo … hizo hiciste … no no déjame ver …eu fiz tu fizeste… ele fez … eu fiz tu fizeste ele fez … yo hizo **o hice**…. **yo hizo**… **YO hice** no?

E: sí yo hice

C: yo hice: … tu hiciste … él … él hizo .. déjame ver entonces (5s) **hice … hicelo … hicilo** … como yo digo por ejemplo … yo hice el reparo del ordenador … **hicilo**?

E: no … lo hice … yo lo hice … por ejemplo yo lo hice

C: podría decir lo hice?

E: sí

C: **ah sí lo hice …** es equivalente para: … ah.. entonces … fi-lo

It can be observed that there is a landscape related to pronoun usage which will be explored, led by the control parameter from partner's help. As Larsen-Freeman and Cameron (2008) state, the parameters are responsible for changing the system. Thus, every time Cláudio explains that he has a doubt, there is scope for the creation of new patterns, the edge of chaos.

There is room for the variant which leads the system through feedback: the partner. In the interview, Cláudio stated:

(Personal interview, June 9, 2011)

P: Don't you know to express in foreign language/ in Spanish, in this case … you don't know the word you don't know how to speak that what do you do?

C: I **use a paraphrase** for example:: … ah::: how can I say that object that:: and/or/ is used in such place:: eh:: ... and people tananan … I:: … try … for example I don't know such word **I … try to explain what I am trying to say … he starts / my interactant/ he starts saying is it? … speak ... he starts giving: let's say solutions until we get to some:: place**[6]

As noted, the interactant really states to take the "risk" and to produce the form in which negotiation will take place, in a move in which there is a scope

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[6] P: Você não sabe se expressar em língua estrangeira/ em língua espanhola no caso … você não sabe a palavra você não sabe como falar aquilo que que você faz?

C: eu **uso uma paráfrase** por exemplo:: … ah::: como se disse aquello objeto que:: e/o/ es utilizado em tal lugar:: eh:: … e as personas tananan … eu:: … tento … por exemplo eu não sei tal palavra **eu … tento explicar o que que eu to tentando dizer … ele começa/ o meu interagente/ ele começa a falar é isso? … falar … ele começa a dar: vamos dizer soluções até que a gente chegue num:: lugar**

for his complex adaptive system so that an external disturbance provides the creation of new stability patterns, a soft assembly. It must be said that negotiation, most of the times, happened due to Cláudio's initiative. When the interactant felt that his form was not the most correct one, he asked the partner and thus he received a feedback. There were many occurrences of pronoun gaps. However, as Cláudio did not ask for feedback, Eros did not correct/show him the most appropriate form. This is to say, the Teletandem system among them was also adjusted to the openings exposed by Cláudio's sub-system. When there were no questions, attractor state was kept. For example:

(Audio interaction via Skype, May 3, 2011)

C: incluso yo puedo pasar∅ por Skype si tú quisie:::ras

(Audio interaction via Skype, May 6, 2011)

C: voy a escribir∅ en el Skype … déjame escribirÆ en español

It is highlighted that these occurrences explain that the gap in pronoun usage is fairly optional: as the message can be understood without the pronoun, perhaps for this reason they did not discussed the theme at that moment in order to keep interaction flow. This is to say, a control parameter of "interacting", "talking" may have led the interactants in order not to take the system out of stability and maintenance state. Additionally, as Lina Lee (2008) states, negotiation and feedback in virtual conversations happen more properly due to lexical matters than syntactic ones.

Cláudio acknowledges his difficulty with pronouns. In the written interaction reports, Cláudio mentions:

(Report for the subject, end of 2011)

With respect to pronoun usage, I could observe in practice that the way my interlocutor spoke was much closer to the grammar I learnt in Spanish classes, reinforcing even more this consideration[7]

Cláudio seems to need to confirm his hypotheses. In the interview, Cláudio stated by talking about the role of his partner:

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[7] Con respecto a la colocación de pronombres, pude observar en la práctica que la forma como mi interlocutor hablaba era muy próxima a la gramática, así como aprendí en las clases de Lengua Española, reforzando aun más esta consideración

(Personal interview, June 9, 2011)

C: … to help to complement teaching: … what:: I mean it is not that there is an ABSENCE but school does not meet all needs… ah: **to clear up some doubts … eh:: for me to teach new: … features of a given culture**[8]

Cláudio's system, therefore, is opened to his partner's disturbances: he states that his pair would *clear up his doubts, teach new stuff*. Due to these aspects it is possible to say that Teletandem openness to mutual influence between systems characterizes a fractal, by giving priority to associative interaction based on the principles of reciprocity and autonomy (VASSALLO; TELLES, 2006): this qualification is observed in all levels/scales.

Cláudio also showed variability with respect to use of grammatical persons in the sentence. This was a recurring characteristic of his system:

CHART 1

Variability with respect to use of grammatical persons

Use	Suggestion	Date
No **hube** ningún inconveniente a mi	Hubo	Nov. 14. 2011 (e-mail)
creo que es una gramática más práctica… **vas** a ayudarte mejor el recipiente donde *tú tomas* té… café… capuccino… cosa del tipo	Va	May 3 2011 (interaction) May 6 2011 (interaction)
C: o arquivo apareceu ai ou não? E: no he comprendido C: **has** aparecido o no?	Há	May 6 2011 (interaction)
tú **hay** que unir em un: .. una só letra… ok? […] Has entendido?	Tienes	May 6 2011 (interaction)
C: ah déjame ver.. tú no *has entendido* por qué utilizar así?	*	May 6 2011 (interaction)
C: si *tú quisieras* ler en voz alta… para que yo pueda corregir	*	May 6 2011 (interaction)
tú por ejemplo **pega** un/una ca/un BOLÍGRAFO […] *tú pagas* un	Coges	Jun.5 2011 (interaction)
C: si *tú dices* algo como por ejemplo […] tú *has dicho* sólo com unas	*	Jun. 5 2011 (interaction)
C: […] cómo *tú ah:: dírias* eso en portugués	*	Jun. 5 2011 (interaction)

* Grammatically recommended use
Source: Own preparation.

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[8] C: … a/ajudar complementar o ensino: … que:: vamos dizer não é que FALTA mas que a/ que a sala de aula num supre totalmente … ah: **tirar algumas dúvidas … eh:: para mim ensinar novas: … características de uma dada cultura**

IL complex system seems to be in a wave zone with the attractor strengths leading to one or another scenario within the interactant's probabilistic space for this grammatical form. As Herdina and Jessner (2002) mentioned, the variability is the standard in complex systems. In the last interactions, the use of second-person form to refer to the partner seems to have been larger. No uses of second person instead of third person, neither uses of first person instead of second person were found: system behaviors cannot always be predicted because we can never know which particular grain of sand will produce the avalanche (LARSEN-FREEMAN; CAMERON, 2008). It cannot be said for sure which factors caused this variation: they can result from hypotheses in test, from more or less robust monitoring use, from the theme concerned, from the context, from fatigue, etc. As Larsen-Freeman and Cameron state,

> Even when a system is in a stable mode or attractor, it is still continually changing as a result of change in its constituent elements or agents and change in how they interact [...] A complex system will show degrees of variability around stabilities, and the interplay of stability and variability offers potentially useful information about change in the system. [...] Changes in variability can be indicators of development (LARSEN-FREEMAN; CAMERON, 2008, p. 238).

The emergence of new behaviors in learner's IL can show the development process. The self-adjustment of complex systems causes an adaptation which fits for a certain moment, but any change can cause new patterns or new system behaviors.

It should be noted that the proximity between the languages appears to be also a fractal of the complex adaptive system analyzed here. According to Herdina and Jessner (2002), the closer the levels of both systems are to each other, the greater the degree of interference to be expected. This is so true that it was mutually agreed that the Spanish would be used for metalinguistic explanations, even for explanations about Portuguese:

(Audio interaction via Skype, May 22, 2011)

C: esta contracción es más del linguaje literario … tú no vas a oír por ejemplo: … ah: … has ha hecho la ah: las tareas de la escuela… por ejemplo… y el niño contesta no: .. no/ por ejemplo … você fez a tarefa da escola… aí o menino fala … fiz o … fi lo .. tú no vas a oír eso … sim eu … não eu não fiz… esa manera no es muy común es sólo para tener en cuenta que existe per no … no vas a escuchar no vas a hablar de esta manera.

This characteristic proved to be on duty of the control parameter of dialogue maintenance in the interaction. Thus, Teletandem system between this partnership seemed to be based on mutual teaching and formal learning commitment, having Spanish as metalinguistic language. Maybe if the control parameter was a better linguistic acuity, the proximity could have caused bigger "obstacles", but there would be a greater "evolution" of the system towards Target-Language: another route in landscape.

Unfortunately, this partnership did not last long. During about 18 hours of interaction, there were few moments in which the session was delimited to Spanish learning, even though this has been used as a language for metalanguage. Cláudio played much more the role of scope in his partner learning process and, in his own way, he attempted to help him by presenting the most diverse inputs. However, this fact did not present a guarantee that the system would be kept stable, once variability was high.

Dani's interlanguage as a complex adaptive system

Once acquisition is a complex system, several agents and components configure it – linguistic, psychological ones (LEFFA, 2009). The emergence of new patterns of linguistic behaviors happens precisely when the system is in a situation of variability: there is a "break" of stability and, in the seesaw between one and another system (which can be observed in Spanish by the production using elements of Portuguese), a highly oscillating attractor is configured due to the low inclinations of its margin.

Thus, as the system is variable, there is dynamicity even in apparent stability. In Dani's chat production, this variability was constant. For example, in the use of the structure *ir/volver + a + infinitive* which is typical of Spanish:

CHART 2
Use of the structure ir/volver + a + infinitive

Occurrence	Date
Voy procurar	Jun. 2 2009 (interaction)
Voy a enviarte	Jul. 2 2009 (interaction)
Vamos empezar	
Voy a buscar	Jul. 13 2009 (interaction)
Voy procurando	
Vas a gastar	Jul. 24 2009 (interaction)
Voy bañarme	Aug. 4 2009 (interaction)
Voy procurar	Aug. 10 2009 (interaction)
Volvernos a vernos	
Voy a dar clases, *no voy cuidar de los chicos hoy*	Oct. 6 2009 (interaction)
Voy bañarme	
Vamos pensar	Oct. 22 2009 (interaction)
Voy ir a comer	Oct. 29 2009 (interaction)
***Voy a decidir** o que voy hacer*	Nov. 17 2009 (interaction)
Voy a continuar	
Voy hacer	Dec. 1 2009 (interaction)
Volver a nos hablar	Dec. 14 2009 (interaction)

* *Deviations* are in italic, **correct form** in bold and ***correct forms but with other deviations*** in italic and bold.

Source: Own preparation.

It can be noticed that there were occurrences with deviations, others with the correct form and alternations in the same sentence. These data explain that IL is actually a complex system and, therefore, it shows a high degree of variability. As Ellis (2007) states, it is not about anarchy or chaos, but dynamic patterns (as several hypotheses are raised) establishing a complex and adaptive systematic. Another variability was observed with respect to the form *conozco*:

(Interaction via MSN, August 4, 2009)

JULIO says: como vez y tu **conoces** todo brasil
Dani says: Nooooo!!!!
no **conosco** case nadie
[…]
Dani says: **conosco** poquísimos lugares aquí …. y aquí tiene lugares muy bellos que me gustaría **conocer** pero es muy caro

JULIO says: invitame a **conoser** rio
Dani says: sí, puedes venir, pero ni yo **conozco**
tengo ganas de **conocer** el Rio de Janeiro

It is possible to observe variability both in FL production by Dani and in L1 by Julio. Julio produces *conoces*. In the first two times, Dani uses the first person written with *s, conosco*. After Julio writes *conoser*, Dani shifts the form to *conozco*. As she was the mediator of this partnership, she noted by observing data that Julio showed deviations in spelling of his own L1:

(Interaction via MSN, August 10, 2009)

Dani says: el metro yo conozco […]
JULIO says: el metro yo lo **conosco**
Dani says: Yo lo **conosco**

It can also be observed that Julio corrects his partner with the wrong form. Dani used the form with letter "s" in the previous excerpt. Nevertheless, due to the fact that many patterns can repeat whereas others will never appear, Dani kept the right form:

(Interaction via MSN, September 22, 2009)

Julio says: bueno a ver que de plato te pobre comentar porq nuestra gastronomia es muy diversa
Dani says: no sé .. no conozco …

(Interaction via MSN, September 23, 2009)

Dani says: sí sí .. conozco el de disney
Bambi
However, in viewing session:[9]

(Viewing session – face-to-face, held on February 10, 2010)

A: and these two forms o: … here you said **conozco** … did you wrote, did not you? … and here you wrote **conosco** … do you think that: … that this change happened due to some:/ to typing:::
D: no/no:: I do not know … I think it was not due to typing … I think that: … maybe excitement at the moment but I do not think it was typing:::
A: which of two forms you recognize as being so… do you think it is the most appropriate one?

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[9] These data was collected only with Dani.

D: I think it is the first one (in the example, it would be the *conosco* form)
A: ok
D: but I am not sure[10]

Dani pointed out as the correct form exactly that one which Julio corrected, written with the letter *s*. For this reason that, at the same time in which the correction did not apparently have effects in her production in subsequent interactions, the change in her system remained with respect to the correct form as well as a variation in her stability probably resulting from the degree of interference. It cannot be stated for sure that this was the implication for the doubt. However, the excerpt shown to her was not that one in which Julio corrects her (which would make her believe again that she was wrong – at least theoretically). Due to this fact the partner may have influenced the stability of her system: i.e., the partner is considered the control parameter.

Variability also occurred with respect to the creation of personal infinitive in Spanish. There were several occurrences, but none of them was corrected:

CHART 3
Creation of personal infinitive in Spanish

Occurrence	Date
… ahí será posible nos *comunicarmos* mejor … pero siempre que yo *puder* te llamo aquí	Jun. 2 2009 (interaction)
… con miedo de no *conseguirmos* hablar … pero si yo no *estuvier* aquí alguna vez … entonces no será posible nos *hablarmos* … Qué piensas se *tenermos* la semana que viene como nuestras vacaciones	Jun. 30 2009 (interaction)
… si tiene problemas *hacermos* en el jueves a las 15…	Jul. 10 2009 (interaction)
… ahí cuando *llegarmos* al final empezamos la geografía	Jul. 13 2009 (interaction)
… pero si *estuvier* online puede ser	Jul. 30 2009 (interaction)
… es la única forma de yo *tener* dinero	Sep. 22 2009 (interaction)
… es muy malo para ti en el martes *hablarmos* a las …	Oct. 22 2009 (interaction)

* Occurrences are in italic.
Source: Own preparation.

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[10] A: e essas duas formas o: … aqui você falou **conozco** … você escreveu né? … e aqui você escreveu **conosco** … você acha que: … que essa variação aconteceu por algum:/ pela digitação:::
D: não/ não:: num sei … acho que não foi pela digitação … acho que: … talvez a empolgação da hora assim mas acho que não foi digitação:::
A: qual das duas formas você reconhece assim … você acha que é a mais própria?

During an interaction, Dani explained that she was making an assumption:

(Interaction via MSN, October 13, 2009)

Dani says: No … mi profesora va a demorar para traerlos .. yo creo! Pero así que yo saber (no sé si es así) yo te digo
JULIO says: ya estas
 Dani says: sí
JULIO says: entonces que ya quieres aprender palabrotas?

When asked about her actions to learn with her partner, Dani answers:

(Chat interview via MSN, June 25, 2009)

Dani says: I make notes, I try to understand the application, I give it back with one question so that I will be sure that I really understood, I try not to make the same mistake again and I make the reports (which are for my internship) that he corrects and gives me back …[11]

This is to say, having asked for her partner's confirmation was an action arising from her attempt to learn better. Probably the strategy arose from learner's motivation: besides studying the language in regular classes, she carried out Teletandem and also an academic internship with focus on FL, which causes implications for the system development, as observed.

Nevertheless, despite having shown an openness in her system – given that clearing up doubts is an evidence that the system is on the edge of chaos –, Julio does not talk about his production, which may have been considered, in theory, a ratification. This produces qualitative changes that characterize the complex system. Probably for this reason the system did not suffer any changes: from all occurrences with personal infinitive used in Portuguese, the form used by Dani was: her L1 system, characterizing, therefore, the transfer process (HERDINA; JESSNER, 2002).

Dani had no feedback about these mistakes and about other ones. According to Paiva, feedback in virtual environment would be a "reaction to the presence or absence of a given action with the purposes of evaluating or seeking

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D: eu acho que é a primeira (no exemplo seria a forma conosco)
A: tá
D: mas eu não tenho certeza

[11] Dani diz: anoto, tento entender as aplicações, devolvo com uma pergunta para que eu obtenha a confirmação de que realmente entendi, tento não errar de novo e faço os diários (que são do meu estágio) que ele corrige e me devolve.

evaluation of the performance in the teaching-learning process, or to reflect on the interaction in order to inspire, control or evaluate it." (PAIVA, 2003, p. 1). Therefore, feedback would be a moment for evaluation, control and inspiration. It would be an inspiration which would push learning system over its borders of stability. Once nothing was corrected, (apparent) balance was kept.

It is worth to mention that other occurrences of deviations happened in several moments of the interaction, as well as negotiations for meaning, in addition to those presented here. However, these data were chosen in order to show the variability in Teletandem. This is because the interactants observed here are attending a university where they will graduate to work with Spanish: it cannot be told that all occurrences or negotiations were directly responsible for a qualitative evolution of the system. Actually this is not the intention of a complex view. As Larsen-Freeman and Cameron (2008) state, we must be careful to use the words *progress* and *regression*, once the system is constantly developing and this subjective characterization should not be necessarily present in this process. Especially when it comes to close languages: it seems to exist a constant flow of adaptation of L1 attractor to FL elements.

In interview, when asked about what she did when she failed to communicate in Spanish, Dani answers:

(Chat interview via MSN, June 25, 2009)

P says: and when you do not know how to express yourself, what did you do to communicate?
Dani says: well, I try to write as close as possible to what I mean […]
Dani says: I do not know … if I do not know how to express is only because I do not know how to say that or how to say that in his language … so I try to explain better and I wait for his answer ... if he answers what I was expecting, it is ok, otherwise I try again […]
Dani says: I do not speak in Portuguese because he does not know the language, I think I use synonyms
Dani says: I think it has not happened yet, so I cannot answer it[12]

_____

[12] P diz: e quando você não sabe como se expressar, como você faz para se comunicar?
Dani diz: aí tento escrever de uma maneira que chegue mais próximo do que eu quero dizer […]
Dani diz: não sei … se eu não sei como me expressar é somente porque eu não sei como dizer aquilo ou que jeito dizer aquilo na língua dele … então tento ficar rodeando e espero a resposta dele … se ele responder o que eu buscava tudo bem, senão eu tento de novo
[…]

This is to say, by reading Dani's utterance, it is observed again that this strange attractor seems to the interactant to be located only in the space of FL phase. Actually, as both languages are too close, too alike, there is the illusion that it is being produced correctly. Besides, as there was no feedback by the partner, this stability was kept.

Some considerations about the system

The considerations exposed here aim at highlighting the complex adaptive system of Spanish learning in Telentadem. For this reason, learners may be perceived as sub-systems, as agents, as "individual humans and other animate beings, as well as aspects and combinations of them: an agent might be an individual, a household, a nerve cell, a specimen" (LARSEN-FREEMAN; CAMERON, 2008, p. 27), "people as agents in social systems, using other complex systems – of language and other semiotic means – interacting with each other." (LARSEN-FREEMAN; CAMERON, 2008, p. 161).

It was observed that even in similar initial conditions for partnership concerning Teletandem process, there was a variability between the systems – small differences produced a great diversity. Certainly the influences of control parameters of interaction maintenance, of motivation to interact and of adaptations with respect to Teletandem virtual fractal affect all progress of the system and the development of IL.

As Paiva (2009) already mentioned, IL would be a third attractor in phase space, set up when the learner is engaged to the activity of learning a language. The motion between L1 and FL attractor would cause this new space, a strange attractor, in author's words. According to Larsen-Freeman (1997), fossilization happens when learners' grammatical system stabilizes on a fixed attractor: each IL is driven by strange attractors of its L1 – and for this reason there are differences in the pronunciation of the same language by people from different L1s.

Would learning of close languages have well delimited attractors? According to Holland (1995), complex systems explicit consistency even before changes. A consistency observed in Spanish learning process by Portuguese speakers is precisely a continuous mix, a zone where there are

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Dani diz: não falo em português porque ele não sabe a língua, acho que eu uso sinônimos
Dani diz: acho que não aconteceu nenhuma vez ainda, por isso não estou conseguindo responder

elements of both FL and L1 that are mostly recognized by the speaker as prototypical of FL.

It is clear that this mix, this seesaw between the languages in landscape, is a characteristic of the IL itself, as well as Paiva (2009) states. Nevertheless, as already mentioned by Herdina and Jessner (2002), proximity is defined with relation to the competition established between the systems. For this reason it can be told that when a Portuguese speaker learns Spanish, there usually is a phase space with attractors topographically *more or less shallow*. According to Larsen-Freeman and Cameron (2008), this is because these attractors have a high degree of uncertainty, as observed in IL system. Additionally the strength of an attractor is given by its depth and by the inclination of its sides and the learning process of close languages is also configured in an attractor point. However there is an oscillating motion from one and another point much more recurring, in which three attractors (L1, FL and IL) are almost in the same level at the phase space:

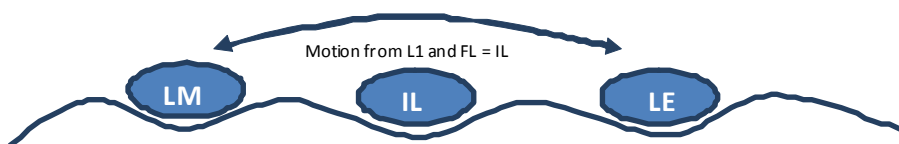Motion from L1 and FL = IL

LM   IL   LE

FIGURE 1 – Motion from L1 and FL in Spanish learning process
in Teletandem: IL as a shallow space
Source: Own preparation

Therefore, the acquisition system in Teletandem, with its nuances underlying this context, is a complex system. The first conditions of academic formality and mediation, led – together with the ease of communication established between close languages – interactants to spaces more or less shallow, in which the movement from L1 to FL forms happens in a constant flow.

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