Emergence in Second Language Writing: a Methodological Inroad

Emergência na escrita em segunda língua: uma incursão metodológica

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ABSTRACT: Complex Systems Theory (CST) has been called upon in many different fields as a means of examining phenomena in a way that makes interconnectivity and emergence central to research. For applied linguistics, CST offers the possibility of encompassing both language and learning. In doing so, the theoretical orientation needs to be fully integrated into the research process through research methodology. This paper describes a qualitative microethnographic method, *Lexical Trail Analysis*, which draws on the concept of emergence. It is an analytic method that enables us to see the longitudinal development of words and their patterns. It is applied here in a case study of the development of one second language user's lexicogrammatical patterns (formulaic sequences, collocations, idioms, etc.). Her word patterns are traced as she prepares for a university entrance test and later, once she enters the university. Her use of patterns involves *adaptive imitation*, a complex process of perceiving, imitating and adapting patterns to suit new communicative goals.

KEYWORDS: Complex Systems Theory; second language learning; Sociocultural Theory; emergence; formulaic sequences; collocation, vocabulary acquisition, imitation.

RESUMO: A Teoria de Sistemas Complexos (TSC) tem sido acionada em diversos campos, como forma de examinar os fenômenos de uma maneira que faz com que a interconectividade e emergência sejam centrais para pesquisa. Para a linguística aplicada, TSC oferece a possibilidade de englobar tanto a linguagm quanto a aprendizagem. Ao fazer isso, a orientação teórica tem de ser totalmente integrada ao processo de pesquisa por meio da metodologia de pesquisa. Este artigo descreve um método qualitativo microetnográfico, *Análise de Traços Lexicais*, que se baseia no conceito de emergência. É um método analítico que nos permite ver o desenvolvimento longitudinal de palavras e de seus padrões. Ele é aplicado aqui

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em um estudo de caso sobre o desenvolvimento de padrões léxico-gramaticais (sequências formulaicas, colocações, expressões idiomáticas etc.) de uma usuária de uma segunda língua. Seus padrões de palavras são rastreados enquanto ela se prepara para o vestibular para a universidade e, posteriormente, assim que ela entra na universidade. Seu uso de padrões envolve *imitação adaptativa*, um processo complexo de percepção de padrões, imitação e adaptação para atender aos novos objetivos comunicativos.

Introduction

The modern era has seen the increasing tangibility of complexity through the development of tools that have enabled unprecedented levels of observation, connectivity and information. Perhaps because of this, the notion of complex, dynamic systems that are borne out of emergent processes has become a persuasive metaphor for knowledge building in many disciplines. Central to complex systems is the notion of 'emergence'. In a journal devoted to the concept, Jeffery Goldstein (1999) defines emergence as "the arising of novel and coherent structures, patterns, and properties during the process of self-organization in complex systems" (p. 49). Emergent phenomena, he says "are conceptualized as occurring on the macro level, in contrast to the micro-level components and processes out of which they arise" (p. 49). While the idea is not new–it has its roots in the writings of Aristotle–it is now well-established as an explanation for the development of a broad range of phenomena, from cities to ant colonies (JOHNSON, 2001) and is extensively applied in both philosophy and the sciences (BEDAU; HUMPHREYS, 2008).

Sociology has also been fertile ground for a complex/dynamic systems approach, most obviously underpinning network analysis. A leading proponent, John Scott, describes cultural meaning-making within a systems perspective whereby the phenomenon of human communication operates within human systems more generally. These, he argues, have much in common with systems of nature in terms of the principles of "interdependence, function, and self-regulation" (2011, p. 269). He uses human meaning-making as an example of a conglomerate of "interdependent systems of signs and representations that allow human communication to channel a flow of information through which social relations and social groups are able to function in particular ways and so

to produce the positive and negative feedback that results in social reproduction and transformation" (p. 269). It is through such "cybernetic processes", Scott claims, that we build "socially organized systems of action" as well as "psychological systems of the personality" (p. 269). Indeed, emergent processes are increasingly recognized in language use and the concept of emergence is evident in three main, related strains of research: linguistic emergentism and Usage-Based Linguistics (ELLIS, 2008; ELLIS; LARSEN-FREEMAN, 2009; ELLIS; LARSEN-FREEMAN, 2006; HOEY, 2005; HOPPER, 1998, 1988; MACWHINNEY, 1999; TOMASELLO, 2003, 2000; TYLER, 2010), Complex Systems Theory (FIVE GRACES GROUP, BECKNER *et al.*, 2009; LARSEN-FREEMAN, 1997, 2012; LARSEN-FREEMAN; CAMERON, 2008a; b) and ecological approaches (DE BOT, LOWIE *et al.*, 2007; KRAMSCH; WHITESIDE, 2008; VAN LIER, 2002, 2004, 2000).

In these various approaches, both language use and language learning are conceived of as stemming from emergent processes. Language use is emergent in a diachronic sense in that language use brings about language change, such as grammaticization, creolization, etc. (ELLIS, 2008). Synchronically, elements of use (e.g. a phoneme) signal identifications with different social groups, which shift in relation to one another as change ripples through communities (FIVE GRACES GROUP, BECKNER *et al.*, 2009). At any time, any one discourse community is made up of idiolects, which differ infinitesimally from one another but which, en masse, form a conglomerate of patterns of use (FIVE GRACES GROUP, BECKNER *et al.*, 2009). The amalgam of language patterns is identifiable to both insiders and outsiders as the 'language' of particular groups, even though group patterning is in a constant state of flux. Hopper's notion of *emergent grammar* (1998), for example, holds that the sign is provisional; it changes as it is encountered by users. Regularities of sign use, such as grammatical 'rules', settle into patterned formations through repetition in discourse.

Lexicogrammatical patterning

Since computer technology started making inroads into linguistic research, corpus data has provided evidence of the emergent patterns of language use. This agenda has been powerfully informed by the thinking of J.R. Firth, who introduced the idea of *collocation*, the "habitual company" of a word, and *colligation*, a word's regular syntactic characteristics ([1951] 1968,

p. 178-9). The existence of such language patterning, broadly referred to here as lexicogrammatical patterns, is now well attested in linguistic research and theory (e.g. HALLIDAY, 2002; HALLIDAY; HASAN, 1976; HOEY, 2005; SINCLAIR, 1991, 2004; STUBBS, 2001; WRAY, 2002). Despite the capacity for seemingly infinite linguistic manipulation, humans do not use all the possible combinations of linguistic signs (PAWLEY; SYDER, 1983). Instead, we rely on a relatively small number of chunked elements which enable us to communicate more efficiently in terms of cognitive burden, more effectively in terms of meaning and more affectively in terms of social belonging. These somewhat automatised language patterns vary considerably in type and degree of fixedness. They include collocations, phrasal verbs, idioms, etc. e.g. *take appropriate measures, as it were, not a shred of evidence, value highly, it's worth –ing, curry favour, take a bath, wake up, for the time being, not to mention, be based on, abject poverty* (e.g. ERMAN; WARREN, 2000; HOEY, 2005; MOON, 1998; NATTINGER; DECARRICO, 1992; PAWLEY; SYDER, 1983; SINCLAIR, 1991; WRAY, 2002, 2008). As Sinclair put it "the choice of one word conditions the choice of the next, and the next again" (2004, p. 19). This is also true of other levels of language; for instance, languages do not 'allow' any arbitrary combination of phonemes (HAYES, 2009). In his theory of Lexical Priming, Michael Hoey (2005) proposed that every word is "primed for collocational use" – through repeated encounters, a word becomes "cumulatively loaded with the contexts and co-texts in which it is encountered" (p. 8). Language use, then, is the ever-evolving conglomerate of collective sign patterns in a discourse community. Just as the distributed intelligence of a superorganism, such as an ant colony, is far greater than that of individual ants (HÖLLDOBLER; WILSON, 2009), the lexicogrammatical patterning of discourse communities is far more extensive than that of individual language users.

The learning of languages is also an emergent process in that the patterns of language fragments at different organizational levels (i.e. phonemes, morphemes, letters, words, collocations, grammatical patterns, genres) may be encountered, perceived and imitated in order to understand or be understood, to belong or to signal difference. There is now a significant body of work which deals with chunked language as it pertains to grammatical development or knowledge of lexical multi-word items. Chunks have been studied as a part of a grammatical developmental trajectory, from unanalysed units to creative constructions in individual

usage (e.g. ESKILDSEN, 2008; HAKUTA, 1974; MYLES, HOOPER *et al.*, 1998; MYLES, MITCHELL *et al.*, 1999; PETERS, 1983; WONG FILLMORE, 1976). More idiosyncratic lexical patterning has been studied in language learner corpora, which have been analysed in terms of frequency, semantic characteristics, L1 influence and nativelikeness (e.g. GRANGER, 1998; HOWARTH, 1998a, 1998b; LAUFER; WALDMAN, 2011; NESSELHAUF, 2005; OSBORNE, 2008). Lexically-driven patterns, such as formulaic sequences and collocations, have also been elicited in tests and tasks, often related to a pedagogical focus on lexical patterns (e.g. BOERS, EYCKMANS *et al.*, 2006; GITSAKI, 1999; LAUFER; GIRSAI, 2008; SCHMITT, DÖRNYEI *et al.*, 2004). More rarely, lexical patterns have been considered developmentally in proficiency groups (LAUFER; WALDMAN, 2011; OHLROGGE, 2009) or individual learning (CHURCHILL, 2008; LI; SCHMITT, 2009). Although these various approaches offer quite different perspectives on the phenomenon of chunking, the collective findings contribute to a view of language learning in which learners are engaged in perpetual *chunk-making*, constructing combinations which become more automatised over time, and *chunk-breaking*, segmenting automatic patterns (for a full discussion, see MACQUEEN, 2012). In this light, both language learning and language use are "a bidirectional process of associating and disassociating bits of language" (MACQUEEN, 2012, p. 51). Lexicogrammatical patterning, therefore, is a "real-time social phenomenon" that is "always in a process but never arriving" (HOPPER, 1998, p. 156).

In Tomasello's work on child language acquisition, he proposes that children do not build utterances "morpheme by morpheme", but rather "from a motley assortment of different kinds of preexisting psycholinguistic units" (p. 307). According to Tomasello, a child's language starts with "already constructed pieces of language of various shapes, sizes, and degrees of abstraction (and whose internal complexities she may control to varying degrees), and then 'cuts and pastes' these together in a way appropriate to the current communicative situation" (p. 310). Tomasello places great importance on the ability of the child to learn such fragments imitatively, gradually storing more and more of them, to be to cut and pasted into novel contexts. Importantly, this is a complex imitative process during which the child must engage in role reversal to develop a facility with linguistic symbols that can be understood from the point of view of self and other (TOMASELLO, 2003).

Complex imitation is also central in the work of Vygotsky and modern applications of his sociocultural approach to the development of the human capacity to think, use language and learn other languages (LANTOLF; THORNE, 2006; VYGOTSKY, 1978, 1962). Lantolf and Thorne , for instance, describe imitation as "goal-directed cognitive activity that can result in transformations of the original model" (p. 203). Vygotskyan thinking, as with Tomasello's usage-based theory of language acquisition, places great import upon learning as a cultural mechanism. For Vygotsky, human learning occurs as a result of cultural and historical activity, which is mediated through the use of cultural tools or "artificial adaptations" (VYGOTSKY, 1978, p. 54). Indeed, Vygotsky's theory is predicated upon adaptation and the emergence of human thought and behaviour as a result of social interaction:

> Prior to mastering his own behavior, the child begins to master his surroundings with the help of speech. This produces new relations with the environment in addition to the new organization of behavior itself. The creation of these uniquely human forms of behavior later produce the intellect and become the basis of productive work: the specifically human form of the use of tools (VYGOTSKY, 1978, p. 25).

As with the self-organising, emergent capacity of complex systems, Vygotsky posited that human thought emerges as a result of interactions between the cognitive ability of the child and the environment, which, in turn, enables new interactions and further advancement. Learning involves the use of social interactions and symbolic tools (such as language) to reconstruct and adapt an individual's cognitive resources (VYGOTSKY, 1978, 1962).

Thus, the concept of emergence has some descriptive and explanatory power in language use and language learning. In the following sections, I will set out an analytic method termed *Lexical Trail Analysis* which was developed to encapsulate the emergence of frequently recurring language fragments–lexicogrammatical patterns–for learners of a second language. To demonstrate how this method has been applied, I will present a case study of a second language user as she transitions into a university discourse community.

Making emergence part of the research process: A case study and an analytical method

Although the concept of emergence has been increasingly theorised in applied linguistics, just how to operationalise it in terms of language learning

remains a challenge. Traditionally, language learning is studied either from a grammatical perspective, focusing, for example, on the acquisition of a particular grammatical morpheme, or from a lexical perspective, focusing on the acquisition of single words at different frequency bands, as in lexical sophistication measures, or the diversity of single words a learner produces as in type-token measures. If language is indeed an assortment of lexicogrammatical patterns, ranging from more widely applicable, syntactic patterns to more fixed, idiosyncratic lexical patterns, how can we document the learning of it? How can we encapsulate the adaptive aspect of emergence that occurs over time?

The present study sought to document the ways in which second language learners of English developed their abilities to combine words according to the patterns of the target discourse communities and target genres found within them (for the full account, see MACQUEEN, 2012). I was interested in tracing how words and longer phrases came to be combined by these second language users as they prepared for the IELTS exam and later as they completed assignments for their university subjects. My aim was to explore what patterning occurred in the participants' writing as well as how they came to put the words together as they did. To illustrate the method, I will focus on one of these participants, Ping (a pseudonym).

Method

As Ortega and Iberri-Shea (2005) have suggested, longitudinal research in language learning is "better motivated when key events and turning points in the social or institutional context investigated are considered" (p. 38). This study took the form of a longitudinal case study which encompassed an "ecological transition" in the participant's learning context–from IELTS preparation to university study (BRONFENBRENNER, 1979, p. 6). In a complex system, this might be considered a "phase shift", manifesting in a period of adaptation and the emergence of different behaviour (LARSEN-FREEMAN; CAMERON, 2008a, p. 45). In effect, this involves exploring the effects of *context*, the environment in which an activity occurs, on *co-text*, the linguistic environments of particular lexemes .

Case study participant and procedure

Ping was a 19-year-old native Mandarin speaker from China. She had been in Australia for two weeks when she volunteered to participate in this

research. At the time, Ping was undertaking a test preparation course at a language centre to achieve a minimum IELTS test score of 6 for university admission. In keeping with her goal, Ping completed five argumentative essays in preparation for the IELTS academic writing test (task two).[1] I provided her with assistance in the form of indirect feedback (problem elements highlighted but not changed) on aspects of her writing. She also received positive feedback on aspects of her writing. Ping then revised the essay as she saw fit and I provided her with a reformulated version of her revised essay so she could check her revisions. After each essay had been revised, I met with Ping to discuss aspects of her writing. I then supplied her with a reformulated version of the essay.

The interview occurred 3-4 days after each essay was revised. The essays were stimulated recall instruments (GASS; MACKEY, 2000) in that Ping and I looked at her original and her revised versions while we discussed reasons for her word combinations (for my purposes) and aspects of the feedback (for her purposes). The interview method was recursive: accumulating patterns in the data informed the types of questions I asked, for example, about patterning that was emerging in Ping's language or her use of feedback. All interviews were recorded and transcribed for analysis.

As Watson-Gegeo (2004) proposes, ethnographic interviews can focus on "goals, inferences, and other understanding of interactions in which they or others participated; emergent patterns in data; and theoretical issues salient to the research questions that evolve, grounded-theory style, from accumulating data and continuous analysis" (p. 342). That said, the very act of verbalizing thought is likely to have some effect on memory since the discussion itself is socially constructed (SMAGORINSKY, 2001, 1998).

After Ping achieved an IELTS score of 6.5, she entered university. She then completed three assignments for her Diploma of Commerce, which were used in this analysis. Approximately one year later, Ping was given an individualized gap-fill test based on selected patterns from her own written corpus. Her participation is summarized in Table 1.

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[1] International English Language Testing System. The tasks were IELTS-type tasks, not actual IELTS tasks. See <http://www.ielts.org/>.

TABLE 1

Ping's written corpus and timeline (adapted from MACQUEEN, 2012)

Writing sample	Word count	Date
Argumentative essay 1	343	17 May 2005
Argumentative essay 2	371	23 May 2005
Argumentative essay 3	300	31 May 2005
Argumentative essay 4	290	8 Jun 2005
Argumentative essay 5	292	9 Aug 2005
University assignment 1	1528	18 Jul 2005
University assignment 2	1013	25 Jul 2005
University assignment 3	2113	29 Aug 2005
Individualized test	-	21 June 2006
Total words original writing	**6250**	
Total words (original, revised and reformulated versions where applicable)	**10,509**	

Lexical Trail Analysis

The analytic method needed to illuminate the data in terms of diachronic change in Ping's lexicogrammatical patterning as well as incorporate insights from the interviews. This was done by: a) linking the interview transcript to the aspects of writing that they refer to and b) gathering all the data that referred to the use of one lexeme or one combination of words in chronological sequence. This process formed the basis of the analysis.

Definition of a lexical trail

Building a lexical trail involves tracing a participant's experience with single lexemes over time. A lexical trail can be defined as a detailed, contextualized, chronological concordance of a single lexeme or a recurring combination used by an individual. It includes, where available, the user's perspective on the history of his/her use of the word and the words around it, as well as any other relevant co-textual (i.e. surrounding text) and contextual information available. In this study such information was gathered from the participants themselves through qualitative interviews, from both the feedback and revision process as well as from texts and other sources that participants used for assistance when writing. This data was then supplemented with

insights from an individualised test, which was based on each participant's lexical trail analysis. In the ethnographic tradition, multiple perspectives on the data were sought (RAMANATHAN; ATKINSON, 1999), but not all lexical trails comprise all these data sources. Some contain only a few uses, whereas others contain 20 or more uses of a word or phrase, along with multiple insights from interviews, external texts and the test. As with Lillis's (2008) "heuristic for tracking changes across drafts", changes in texts are combined with other types of data to connect etic text analysis with emic and etic understandings of it (p. 369). An abridged example of a lexical trail which traces the verb *focus* in Ping's writing is provided in Table 2.

TABLE 2

Example of a lexical trail (adapted from MACQUEEN, 2012)

Composition, line & date	Ping's writing interview excerpts where relevant		
	Ping's original	Ping's revision	Susy's reformulation
Pre-uni 2.11 24 May 2005	…you can **focus on** the channels…	…you can **focus on** the channels…	…you can **focus on** the channels…
Pre-uni 2.12	… you can **focus on** the Business Channel … you can also **focus on** the Sports Channel …	… you can **focus on** the Business Channel … you can also **focus on** the Sports Channel …	…you can **focus on** the Business Channel …you can watch *(just to vary the verb!)* the Sports Channel …
Uni 1.4 18 Jul 2005	… the most basic responsibility of a manager is to **focus people to** the performance of work activities…		
Interview Uni A1.7-22	S: What about this group of words - *focus people to*? P: It's the topic S: And it definitely had *to* be here? P: Yeah		
Uni 1.20	… their destination is unified——to **focus people to** the performance of work activities…		
Uni 1.34	… the core job of a manager is to **focus subordinates to** the performance of work activities…		
Uni 1.50	Managers should **being focus on** the performance of the workers …		
Uni 1.57	… the most basic responsibility of a manager is **to focus subordinates to** the performance…		
Uni 3.15 29 Aug 2005	… the corporate social responsibility **was focus on** businesspeople's social conscience…		
Interview Uni (A3.72-85)	S: *Was focus on* - why did you use passive here? P: Maybe just because it's in 1983 S: Actually is it passive? Did you mean this to be passive? You need this (types *was focused on*) - *was focused on*- for passive, don't you? P: Maybe I guess *focus* is a adjective S: Yeah. P: But I guess I saw this kind of phrase before S: In this reference or in something else? P: Many place. It's not…		
Test 20 Jun 2006	Each exercise in the book **is focussing (1) focuses (2) on** a different grammar point. *(use any form of the verb 'focus' and at least one other word)* **Test introspection box:** Why did you choose this answer? **b** – 'I have a feeling it's ok.' Confidence rating: **3** **Notes from test administration:** *I didn't show the hint, I asked if Ping could think of another way to use 'focus'; she said 'focuses', but she felt that 'is focusing' is better.*		

The gathering together of multiple uses of a word or combination of words enables us to detect emergent patterns in the individual's language use. These may or may not conform to nativelike norms. As trails are built, patterns in the data start to emerge, such as broader patterns of discourse. Thus, insight into the process of word learning and lexicogrammatical pattern building is constructed from a compilation of word-level microethnographies (MACQUEEN, 2012).

Lexical Trail Analysis applied

Ping's test formulae

As analysis of Ping's mini-corpus proceeded, it became apparent that she depended on certain lexicogrammatical patterns as a composition strategy, particularly as a means of composing in test conditions. Ping completed all her argumentative essays in timed conditions (30 minutes), because she felt this helped her prepare for the IELTS test. Tracing lexemes and patterns in these essays revealed a rhetorical skeleton, shown in Table 3.

TABLE 3
Ping's IELTS discourse patterns (adapted from MACQUEEN, 2012)

Rhetorical position	Lexicogrammatical pattern	No. of uses
Introduction	*Some people think that… while others…*	2
Thesis	*In my opinion, (the advantages (overweigh) the disadvantages)*	4
Paragraph 1	*Firstly,* + first main point	3
Paragraph 2	*Secondly,* + second main point	3
Paragraph 3	*Last but not least,* + last main point	3
Paragraph 4	*Nevertheless,* + counter argument	3
Conclusion	*What (we need to do / needs to be done) is…*	2

Ping self-scaffolded her exam performance with a variable set of lexicogrammatical patterns. She was adept at detecting useful phrases, as the following discussion of *last but not least* suggests:

S:	'Last but not least' where did you learn this phrase?
P:	It also from the reading material.
S:	In Australia?
P:	No, in China.
S:	Did you look it up in the dictionary?
P:	No never.
S:	How did you know this was a set expression – how did you know to collect everything?
P:	**Because it was used many times.**
S:	Oh I see.
P:	**I think it's useful to use it in the argument.**
S:	Yeah I think so
P:	**So I look at this kind of material once, twice, three times so I think it's a set phrases**. (P1.141-152)

Indeed, *last but not least* was an enduring phrase for Ping which recurred into her university assignments as a signal for her final point in the composition. Table 4 shows Ping's rhetorical formulae throughout her participation period, encompassing her transition into university discipline writing.

It is interesting to see that Ping's rhetorical formulae began to change in her fourth and fifth argumentative essays when she knew she had achieved the required score for university entrance and no longer needed to practise for IELTS. She replaces *Firstly,…* and *Secondly,…* with more sophisticated phrases: *the first priority is that…* and *a second major issue,* respectively. In my feedback comment, I praised Ping's use of these new connectors:

> Very good to see you making more sophisticated connections between your paragraphs, instead of *firstly,* etc.

TABLE 4
Ping's rhetorical formulae (adapted from MACQUEEN, 2012)

	Pre-uni 1	Pre-uni 2	Pre-uni 3	Pre-uni 4	Pre-uni 5	Uni 1	Uni 2	Uni 3
Intro	**Some people think that… while others** worry about…	**Some people think that…, while others** hold the point of view that …						
Thesis	I quite agree with the advantages of E-mail and the reasons are as follows.	**In my opinion, the advantages of** television viewing **overweigh the disadvantages** because…	In my opinion,	**In my opinion,** (…); but generally speaking, **the advantages overweigh the disadvantages.**	Since…, it is not hard to acknowledge that…			
Para 1	**Firstly,** (point 1)	**Firstly,** (point 1)	**Firstly,** (point 1) reformulated to: **The first priority is that…**	So **the first priority is that…** (point 1) **That is to say, A second major issue is that…** (point 2)		**The first priority is to… "…" That is to say,**	(…) **The first priority is to… "…" That is to say, "…"**	(…) **The first priority is to…** (...); **that is,**
Para 2	**Secondly,** (point 2)	**Secondly,** (point 2)	**Secondly,** (point 2) reformulated to: **A second major issue is that…**	On the other hand, (counter argument)				
Para 3	**Last but not least,** (point 3)	**Last but not least,** (point 3)	**Last but not least,** (point 3)					
Para 4	**Nevertheless,** (counter argument)	**Nevertheless,** (counter argument)			**Nevertheless,** as a coin has two sides, (counter argument)	**Last but not least,** (second last paragraph, sentence preceding conclusion)		**Last but not least,** (second last paragraph, sentence preceding conclusion)
Concl.	**In my opinion, … What we need to do is** … to enhance its **merits** and avoid its short-comings.	(...) **What needs to be done is** to exploit the **merits** and eliminate the drawbacks …	To sum up, …	Although (…), learning something in a second language is a beneficial experience…	**In essence, the advantages of… overweigh the disadvantages.**	**In essence,**	**In essence,**	

At the same time, other new patterns emerged, *that is to say* and *in essence,* and these continued into the university assignments. Essay five, in particular, breaks from her standard formulae, which she explained was the result of no longer using what she considered to be "safe" IELTS-style formulae:

> P: You know **when I prepare for IELTS, the most what I pursue is just to get the score I need so maybe I'll choose some safe way**, but now there's no need to worry about IELTS so I just want to improve my... so I try and be more confident to try something, just like that.
>
> S: So you think you might be experimenting more with words?
>
> P: Ex...?
>
> S: Trying more things, you're being more free...
>
> P: Yeah, **there's no need to just remember the 'firstly, secondly...' – maybe it's not good, but it's safe to got six in writing, so I just want to avoid mistake before but now there's no need to concern about that**. (P5.18:20)

In this excerpt, it is clear that Ping's change in goal had an immediate impact on the language she used, despite the fact that she was doing the same kind of task under the same conditions. While she acknowledges that her original patterning might not be "good", it was "safe" enough to achieve a score of six. Deviating from her tried and tested patterns was too risky. Ping's university patterns manifest her changing goals, tasks and context.

Emergence of a pattern

It is interesting to chart the trajectory of *the first priority* as it demonstrates the emergence of a pattern, from noticing to semi-automatisation. As can be seen in Table 4, *the first priority* first appeared in my reformulation of Ping's use of *Firstly…* in her third test practice essay. What I did not realise was that in reformulating the textual position of *Firstly*, I was unwittingly reformulating part of Ping's discourse structure – her signal for her first main point. Following my model, Ping used *The first priority…* in her next essay instead of *Firstly…* (when she had started to break from her "safe" test rhetorical pattern). Following this use, I made the feedback comment above in which I praised her for trying new phrases. At university, the phrase became a firm part of her rhetorical blueprint, for the purpose of introducing a key concept in the first paragraph:

The first priority is <u>to go back</u> to the concept of organization… (PA1.6)

(…) **The first priority is <u>to define</u>** the core word 'value'… (PA2.5)

The first priority is <u>to define</u> the three correlative concepts… (PA3.6)

This is a new rhetorical structure for Ping, and *the first priority* is transposed from the test practice essays to signal the key concept for the task. Indeed, the lexemes *concept* and *define/definition* do not occur in Ping's pre-university essays. In addition, she re-colligates the phrase with an infinitive clause (underlined above). Further, the phrase becomes part of a new rhetorical frame which, in line with her new university genres, incorporates a direct quotation and is followed by an expanded definition in another direct quotation from another source, signalled by *That is to say, …*. This elaborate university rhetorical pattern is shown in Table 5 as it appears in her first two assignments.

TABLE 5
Assignments 1 & 2 definition sentences and direct quotations
(adapted from MACQUEEN, 2012)

Ping's formula	Assignment 1	Assignment 2
The first priority is to (define X). "Direct quotation" (Author 1).	**The first priority is to** <u>go back to the concept of organization</u>. "An organization is …" (Reference 1).	To introduce the Value Exchange Model, **The first priority is to** <u>define the core word 'value'</u> 'Value' is defined as "what …" (Reference 1).
That is to say, "Direct quotation" (Author 2).	**That is to say,** "it can …" (Reference 2).	**That is to say,** "there must …" (Reference 2).
Since…	**Since …**	**Since …**

In the interview following Ping's university assignments, I asked her about the origin of *the first priority* (which I had forgotten reformulating):

S: You've used this 'The first priority' a number of times, is this new?

P: **It's from you!**

S: Oh is it? (both laugh) ok, so that's from the feedback that I gave you?

P: Yeah

S: That's funny cos I've noticed it a couple of times! Is this quite natural for you now?

P: Yeah. (A1.28-33)

Obviously, Ping was keenly aware of certain lexicogrammatical pattern sources, in this case, she remembered my reformulation of her *Firstly…* in her third test practice essay.

Here, we can observe the cut-and-paste process (TOMASELLO, 2003) of learning the lexicogrammatical patterning of an additional language. Ping imitated the phrase but also adapted it to suit the demands of her new context and the discipline-specific genres she was now required to write. In her second assignment, Ping's construction and the segmentation of old and new word combinations were made clear by her use of a mid-sentence capital 'T': *To introduce the Value Exchange Model, The first priority is to define….* In this use, her imitated chunk *the first priority* is being nested in other discipline-specific patterns as Ping manages the resources of her new discourse community in the service of new communicative goals. Interestingly, during her period of participation in this study, Ping had not yet gained full control of *the first priority* – her four uses were all slightly inappropriate semantically, a result of my reformulation of her discourse marker, where the use of *the first priority* was appropriate. I did not realize that by changing a pattern at sentence level, I was also meddling with Ping's discourse strategy, and that my intervention would have an effect on how she later adapted her stock of patterns to the literacy demands of university. Further, this highlights the fact that the imitation of patterns is part of a complex process of internalization. Even if learners imitate chunks exactly as they encounter them, they begin a process of making patterns serve their own purposes, simultaneously chunk-making and chunk-breaking.

Ping's adaptation of *the first priority* can be described at various levels of the text in terms of Hoey's theory of lexical priming (2005). First, it is a collocation (*priority* does not occur elsewhere in the data) which is colligated at the beginning of the sentence, followed by an infinitival complement. The semantic association of the word *priority* is to be preceded by the notion of *initial* and followed by the notion of *concept.* At a textual level, it is colligated to occur just after the introduction in a text, at the beginning of the paragraph (its "textual colligation"), and its textual-level semantic association is that it introduces the definition of a key task-related concept. Hoey describes these associations at word, sentence and textual level as the "priming prosody" (2005, p. 166). Seeing the pattern in terms of its lexical priming shows how Ping's pattern use is emergent: it was adapted for a specific rhetorical purpose which was different from her previous uses of *firstly,* different from the source (my feedback) and different from her first imitation of it.

Discussion: A methodological inroad

Charting the chronological trajectories of words and patterns through Ping's language use provides us with a glimpse of how patterning emerges in an individual's language use through social interaction. We have seen that some patterns may remain firmly fixed in a user's store of chunk-like combinations, whereas others might shift with a user's changing goals and contexts. We have also seen how lexicogrammatical fragments can be imitated and drawn into a learner's stock of patterns – in Vygotskyan terms, the movement from the interpersonal plane to the intrapersonal plane (VYGOTSKY, 1978). This process might be termed *adaptive imitation*: it is an innovative and recursive microgenetic development that involves perceiving and transforming a language fragment in accordance with the user's co-textual and contextual constraints and goals (MACQUEEN, 2012). As Lantolf and Thorne have argued, "internalization through imitation is not a matter of copying but entails an active, and frequently creative, reasoning process" (2007, p. 210).

The documentation of patterning also demonstrates the process of chunk-making and chunk-breaking: words and phrases become fused to varying degrees with other words or with certain aspects of a text, such as position or concept; words and phrases also become less frequent or disassociated with other textual features. However, the conclusions that can be drawn from a learner's use of single words and patterns in a data set are obviously limited by the extent and type of data collected. A corpus that included spoken language would doubtless reveal different types of patterning, for instance. The method is also constrained by the nature of qualitative interviewing as a method and the fact that Ping and I were re-constructing the writing experience together (TALMY, 2010). This is particularly true in terms of pattern selection for discussion. Larsen-Freeman (2004) suggested that the emergence of language patterns might be revealed through "thick, longitudinal descriptions … on which retrospective microgenetic analyses can be conducted to identify affordances present in the context and in which learner agency is fully acknowledged (…) in order to be able to see emergent language patterns that self-organize out of social interaction, pressures arising from the cognitive system, and biological constraints of the brain and the body" (p. 607). Lexical Trail Analysis is able to reveal something of the microgenetic processes which enable patterning to occur in language use. Each trail tells a slightly different story and, when many trails by one learner can be gathered, a clearer picture of the process emerges.

Of course, studying a word and its surrounds is not new, but what is specific to the technique described here is that there is an ethnographic perspective brought to bear on word combinations. Context is made central to co-text by viewing the word or pattern in holistic terms, to the limits of available data. It calls different systems into the action, such as geographic systems, where participants move across space; economic systems, which place pressure on types and rates of learning; and educational systems, including language assessment, institutional belonging and transitions between institutions, as we have seen here in Ping's transition. This interdependence echoes Scott's "cybernetic processes" of human communication through which social relations are reproduced and transformed (2011, p. 269). Tracing diachronic change in lexicogrammatical patterning might therefore be insightful at a community level (in contrast to the individual level presented in this article). The genesis of patterns as they are adaptively imitated by individuals and the emergent community patterning that results from the distribution of usage might show us more of the process of chunk-making and chunk-breaking that languages continually undergo. This would be particularly insightful at sites of language contact, where chunks, as an essential sociocognitive tool, might encompass the patterns of two historically distinct speech communities. In child language acquisition, too, where the place of imitation is well theorised (for example, in the work of SNOW, 1983; 1981; TOMASELLO, 2003), lexical trails may have something to offer by inviting the sociocognitive resources of the child's environment into the analysis, e.g. caregiver, sibling and peer language patterning, children's books, television, etc. As van Lier has suggested, examining the processes of language learning (and I add lexicogrammatical patterning) from a microecological perspective places "perception (and attention, focusing, and vigilance) and (inter)action at the centre" of the research process (VAN LIER, 1997, p. 785). From this approach, we may learn something new.

References

BEDAU, M. A.; HUMPHREYS, P. (Ed.). *Emergence*: Contemporary readings in philosophy and science. Cambridge, Mass.: MIT Pressed. 2008.

BOERS, F. *et al*. Formulaic sequences and perceived oral proficiency: Putting a Lexical Approach to the test. *Language Teaching Research*, v. 10, n. 3, p. 245-261, 2006.

BRONFENBRENNER, U. *The ecology of human development*: Experiments by nature and design. Cambridge, Mass.: Harvard University Press, 1979. 330p.

CHURCHILL, E. A dynamic systems account of learning a word: From ecology to form relations. *Applied Linguistics*, v. 29, n. 3, p. 339-358, 2008.

DE BOT, K.; LOWIE, W.; VERSPOOR, M. A Dynamic Systems Theory approach to second language acquisition. *Bilingualism: Language and Cognition*, v. 10, n. 1, p. 7-21, 2007.

ELLIS, N. C. The dynamics of second language emergence: Cycles of language use, language change, and language acquisition. *Modern Language Journal*, v. 92, n. 2, p. 232-249, 2008.

ELLIS, N. C.; LARSEN-FREEMAN, D. *Language as a Complex Adaptive System*. Chichester: Blackwell, 2009.

ELLIS, N. C.; LARSEN-FREEMAN, D. Language emergence: Implications for applied linguistics. *Applied Linguistics*, v. 27, n. 4, p. 558-589, 2006.

ERMAN, B.; WARREN, B. The idiom principle and the open choice principle. *Text*, v. 20, n. 1, p. 29-62, 2000.

ESKILDSEN, S. W. Constructing another language—Usage-based linguistics in second language acquisition. *Applied Linguistics*, v. 30, n. 3, p. 335-357, 2008.

FIRTH, J. R. A synopsis of linguistic theory, 1930-1955. In: PALMER, F. R. (Ed.). *Selected papers of J.R. Firth 1952-1959*. London: Longmans Green, [1951] 1968. p.168-205.

FIVE GRACES GROUP *et al*. Language is a Complex Adaptive System: Position paper. *Language Learning*, v. 59, n. Supplement 1, p. 1-27, 2009.

GASS, S. M.; MACKEY, A. *Stimulated recall methodology in second language research*. Mahwah, NJ: Lawrence Erlbaum Associates, 2000. 177p.

GITSAKI, C. *Second language lexical acquisition*: A study of the development of collocational knowledge. San Francisco: International Scholars Publications, 1999.

GOLDSTEIN, J. Emergence as a construct: History and issues. *Emergence: Complexity and Organization*, v. 1, n. 1, p. 49-72, 1999.

GRANGER, S. Prefabricated patterns in advanced EFL writing: Collocations and formulae. In: COWIE, A. P. (Ed.). *Phraseology*: Theory, analysis, and applications. Oxford: Oxford University Press, 1998. p.145-160.

HAKUTA, K. Prefabricated patterns and the emergence of structure in second language acquisition. *Language Learning*, v. 24, n. 2, p. 287-297, 1974.

HALLIDAY, M. A. K. *On grammar*. New York: Continuum, 2002. 442p.

HALLIDAY, M. A. K.; HASAN, R. *Cohesion in English*. London: Longman, 1976. xv, 374.

HAYES, B. *Introductory phonology*. Malden: Blackwell Publishing, 2009.

HOEY, M. *Lexical priming*: A new theory of words and language. Oxon: Routledge, 2005.

HÖLLDOBLER, B.; WILSON, E. O. *The superorganism*: The beauty, elegance, and strangeness of insect societies. New York: Norton, 2009.

HOPPER, P. Emergent grammar. In: TOMASELLO, M. (Ed.). *The new psychology of language*: Cognitive and functional approaches to language structure. Mahwah: Lawrence Erlbaum, 1998. p.155-75.

HOPPER, P. Emergent grammar and the a priori grammar postulate. In: TANNEN, D. (Ed.). *Linguistics in context*: Connecting observation and understanding. Norwood: Ablex, 1988. p.117-134.

HOWARTH, P. Phraseology and second language proficiency. *Applied Linguistics*, v. 19, n. 1, p. 24-44, 1998a.

HOWARTH, P. The phraseology of learner's academic writing. In: COWIE, A. P. (Ed.). *Phraseology*: Theory, analysis and applications. Oxford: Clarendon Press, 1998b. p. 161-186.

JOHNSON, S. *Emergence*: The connected lives of ants, brains, cities and software. New York: Scribner, 2001.

KRAMSCH, C.; WHITESIDE, A. Language ecology in multilingual settings. Towards a theory of symbolic competence. *Applied Linguistics*, v. 29, n. 4, p. 645-671, 2008.

LANTOLF, J. P.; THORNE, S. L. Sociocultural theory and second language acquisition. In: VAN PATTEN, B.; WILLIAMS, J. (Ed.). *Explaining Second Language Acquisition*. Cambridge: Cambridge University Press, 2007. p. 201-224.

LANTOLF, J. P.; THORNE, S. L. *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press, 2006. 296.

LARSEN-FREEMAN, D. CA for SLA? It all depends ... *Modern Language Journal*, v. 88, n. 4, p. 603-607, 2004.

LARSEN-FREEMAN, D. Chaos/complexity science and second language acquisition. *Applied Linguistics*, v. 18, n. 2, p. 141-165, 1997.

LARSEN-FREEMAN, D. Complex, dynamic systems: A new transdisciplinary theme for applied linguistics? *Language Teaching*, v. 45, n. 2, p. 202-214, 2012.

LARSEN-FREEMAN, D.; CAMERON, L. *Complex systems and applied linguistics*. Oxford: Oxford University Press, 2008a.

LARSEN-FREEMAN, D.; CAMERON, L. Research methodology on language development from a complex systems perspective. *Modern Language Journal*, v. 92, n. 2, p. 200-213, 2008b.

LAUFER, B.; GIRSAI, N. Form-focused instruction in second language vocabulary learning: A case for contrastive analysis and translation. *Applied Linguistics*, v. 29, p. 694-716, 2008.

LAUFER, B.; WALDMAN, T. Verb-Noun Collocations in Second Language Writing: A Corpus Analysis of Learners' English. *Language Learning*, v. 61, n. 2, p. 647-672, 2011.

LI, J.; SCHMITT, N. The acquisition of lexical phrases in academic writing: A longitudinal case study. *Journal of Second Language Writing*, v. 18, n. 2, p. 85-102, 2009.

LILLIS, T. Ethnography as method, methodology, and "deep theorizing": Closing the gap Between text and context in academic writing research. *Written Communication*, v. 25, n. 3, p. 353-388, 2008.

MACQUEEN, S. *The emergence of patterns in second language writing*: A sociocognitive exploration of lexical trails. Bern: Peter Lang, 2012.

MACWHINNEY, B. *The emergence of language*. Mahwah, NJ: Lawrence Erlbaum Associates, 1999. 500p.

MOON, R. *Fixed expressions and idioms in English*: A corpus-based approach. Oxford: Oxford University Press, 1998. 338p.

MYLES, F.; HOOPER, J.; MITCHELL, R. Rote or rule? Exploring the role of formulaic language in classroom foreign language learning. *Language Learning*, v. 48, n. 3, p. 323-364, 1998.

MYLES, F.; MITCHELL, R.; HOOPER, J. Interrogative chunks in French L2: A basis for creative construction? *Studies in Second Language Acquisition*, v. 21, p. 49-80, 1999.

NATTINGER, J. R.; DECARRICO, J. S. *Lexical phrases and language teaching*. Oxford: Oxford University Press, 1992.

NESSELHAUF, N. *Collocations in a learner corpus*. Studies in corpus linguistics 14. Amsterdam: John Benjamins, 2005.

OHLROGGE, A. Formulaic expressions in intermediate EFL writing assessment. In: CORRIGAN, R.;MORAVCSIK, E. A.*, et al* (Ed.). *Formulaic language*: Acquisition, loss, psychological reality, and functional explanations. Amsterdam: John Benjamins, v.2, 2009. p. 375-386.

ORTEGA, L.; IBERRI-SHEA, G. Longitudinal research in second language acquisition: Recent trends and future directions. *Annual Review of Applied Linguistics*, v. 25, p. 26-45, 2005.

OSBORNE, J. Phraseology effects as a trigger for errors in L2 English. In: MEUNIER, F.; GRANGER, S. (Ed.). *Phraseology in foreign language learning and teaching*. Amsterdam: John Benjamins, 2008. p. 67-83.

PAWLEY, A.; SYDER, F. Two puzzles for linguistic theory: Nativelike selection and nativelike fluency. In: RICHARDS, J. C.; SCHMIDT, R. W. (Ed.). *Language and communication*. London: Longman, 1983. p. 191-226.

PETERS, A. M. *The units of language acquisition*. Cambridge: Cambridge University Press, 1983. 131p.

RAMANATHAN, V.; ATKINSON, D. Ethnographic approaches and methods in L2 writing research: A critical guide and review. *Applied Linguistics*, v. 20, n. 1, p. 44-70, 1999.

SCHMITT, N. *et al*. Knowledge and acquisition of formulaic sequences: A longitudinal study. In: SCHMITT, N. (Ed.). *Formulaic Sequences: Acquisition, processing and use*. Amsterdam: John Benjamins, 2004. p. 55-86.

SCOTT, J. *Conceptualising the social world*: Principles of sociological analysis. Cambridge: Cambridge University Press, 2011.

SINCLAIR, J. *Corpus, concordance, collocation*. Oxford: Oxford University Press, 1991. 179p.

SINCLAIR, J. *Trust the text*: Language, corpus and discourse. New York: Routledge, 2004. 212p.

SMAGORINSKY, P. Rethinking protocol analysis from a cultural perspective. *Annual Review of Applied Linguistics*, v. 21, p. 233-245, 2001.

SMAGORINSKY, P. Thinking and speech and protocol analysis. *Mind, Culture, and Activity*, v. 5, n. 3, p. 157-177, 1998.

SNOW, C. E. Saying it again: The role of expanded and deferred imitations in language acquisition. In: NELSON, K. (Ed.). *Children's language*. Hillsdale, N.J.: Erlbaum, v.4, 1983. p. 29-58.

SNOW, C. E. The uses of imitation. *Journal of Child Language*, v. 8, p. 205-212, 1981.

STUBBS, M. *Words and phrases*: Corpus studies of lexical semantics. Oxford: Blackwell Publishers, 2001. 267p.

TALMY, S. Qualitative interviews in applied linguistics: From research instrument to social practice. *Annual Review of Applied Linguistics*, v. 30, p. 128-148, 2010.

TOMASELLO, M. *Constructing a language*: A usage-based theory of language acquisition. Cambridge, Mass.: Harvard University Press, 2003. 388p.

TOMASELLO, M. First steps towards a usage-based theory of language acquisition. *Cognitive Linguistics*, v. 11, n. 1-2, p. 61-82, 2000.

TYLER, A. Usage-based approaches to language and their applications to second language learning. *Annual Review of Applied Linguistics*, v. 30, p. 270-291, 2010.

VAN LIER, L. An ecological-semiotic perspective on language and linguistics. In: KRAMSCH, C. (Ed.). *Language acquisition and language socialization*. London: Continuum, 2002. p.140-164.

VAN LIER, L. *The ecology and semiotics of language learning*: A sociocultural perspective. Dordrecht: Kluwer Academic Publishers, 2004.

VAN LIER, L. From input to affordance: Social-interactive learning from an ecological perspective. In: LANTOLF, J. P. (Ed.). *Sociocultural theory and second language learning*. Oxford: Oxford University Press, 2000. p. 296.

VAN LIER, L. Observation from an ecological perspective. *TESOL Quarterly*, v. 31, n. 4, p. 783-787, 1997.

VYGOTSKY, L. S. *Mind in society*: The development of higher psychological processes. Cambridge: Harvard University Press, 1978. 159p.

VYGOTSKY, L. S. *Thought and Language*. Cambridge, Massachusetts: The MIT Press, 1962.

WATSON-GEGEO, K. A. Mind, language, and epistemology: Toward a language socialization paradigm for SLA. *The Modern Language Journal*, v. 88, n. 3, p. 331-350, 2004.

WONG FILLMORE, L. The Second Time Around: Cognitive and Social Strategies in Second Language Acquisition. 1976. Ph.D. Dissertation, Stanford University, 1976.

WRAY, A. *Formulaic language and the lexicon*. Cambridge: Cambridge University Press, 2002. 332p.

WRAY, A. *Formulaic Language*: Pushing the boundaries. Oxford: Oxford University Press, 2008.