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Abstract

This paper compares the Framework-Freedom-Comparative encounters-Feedback sensitivity method of activity design, or FFCF, first proposed in 1999, with an overview of complex systems and applied linguistics published nearly a decade later in 2008 by Larsen-Freeman and Cameron, or LFC. Overall, the FFCF method comes out of the comparison basically unchanged. LFC add in details such as evolving frameworks and discrepancy-noticing to FFCF. The FFCF activity design heuristics were developed to push the complex adaptive system, composed of the students, the activity, and the context, into the edge of chaos regime where optimal L2 language processing takes place. The goal of FFCF is to have a sustained L2 language community emerge out of class of L1 homogeneous students. Two activities that embody FFCF principles, fishbowl and line-up, are used to illustrate the comparison. Fishbowl is an arrangement of students into an outer (talking banned) and an inner circle (talking allowed), with member exchanges initiated by the outer circle. Line-up has the class in parallel lines forming pairs, and pairs change at intervals by shifting the lines.

1 Introduction

The FFCF model (Kumai, 1999) of language activity design, based on chaos and complexity science, emerged out of explorations in maintaining sustained L2
conversations during L2 fluency activities in classes of L1 homogenous students. FFCF stands for framework, freedom, comparative encounters, and feedback sensitivity. This paper will attempt to find changes to the model necessitated by later studies of language learning and complexity science, in particular the research by Larsen-Freeman and Cameron (2008), hereafter designated by LFC.

Before proceeding, it is worth noting that LFC warn against relying on a method based on chaos and complexity science: “One reason we do not think a complexity method is likely is because we think limiting the teacher or learners to certain techniques or activities is antithetical to complexity theory” (pp. 197–198). And still further,

Another reason for not advancing a particular method here is because we think that such an effort would be futile. As with language, methods are dynamically adaptable in use. ... Perhaps the worth of a method should, in part, be a measure of this-how easily adaptable it is. (p. 198)

Despite such cautions, FFCF heuristics have helped guide the author in developing several successful activities from which sustained L2 language communities have emerged. In the following, the various elements of FFCF are briefly explained.

Framework represents the sparse rules of an activity which set up a fitness landscape (Kauffman, 1995, p. 26) of the possible states and accompanying fitness values the complex adaptive system (Holland, 1995, p. 4), composed of the students, the activity, the instructor, the classroom, and the context of the class, can have. Freedom is the latitude students have in an activity. There are various levels of freedom possible: in language use, in strategies employed, in whom students interact with, and in breaking or stretching the rules. Through freedom a complex adaptive system explores the fitness landscape. Taken together, framework and freedom can create conditions that facilitate the edge of chaos regime in which optimal fitness can be approached by the system (Kauffman, 1995, p. 230; LFC, p. 58).

Comparative encounters help students realize in which direction a fitness peak lies. Thus encounters or interactions within an activity should be numerous; limiting an activity to pairwork would reduce the number of fitness landscape paths the interlocutors can explore to reach a higher peak. Encountering a

higher fitness situation, however, would not necessarily make any change in a student’s L2. Incorporating feedback sensitivity in the activity is one solution, so that once a higher fitness is encountered the participant would feel a need to change. Comparative encounters and feedback sensitivity operate together in a way similar to the Vygotskian zone of proximal development (Vygotsky, 1978), where one learns through social interaction with someone more knowledgeable; however, from the complexity perspective, all involved are transformed through co-adaptation (LFC, p. 158).

The outline for the rest of this paper is as follows. Each of the elements of FFCF, framework, freedom, comparative encounters, and feedback sensitivity, are examined in light of LFC’s findings. Then FFCF is compared with a table of key features of complex systems in applied linguistics (LFC, p. 37). Throughout this analysis, two activities that embody FFCF principles, line-up (Appendix A) and fishbowl (Appendix B), are used to illustrate the comparison.

2 Framework

LFC restate an idea taken from Coughlan and Duff (1994): “What if language learning tasks are not viewed as static ‘frames’, but rather more variably, evolving through use by individuals?” (LFC, p. 10). Whereas the original formulation of FFCF did not envision a time-dependent framework, neither did it preclude this notion. A time-dependent framework follows naturally from the dynamical nature of complex systems (Kauffman, 1995, p. 208, p. 222), as seen in this definition from LFC:

In the type of complex systems that we are concerned with, everything is dynamic: not only do the component elements and agents change with time, giving rise to changing states of the system, but the way in which components interact with each other also change with time. (p. 29)

One view of frameworks is that they are relevant only at the beginning of a task:

Looking at the use of language tasks through the lens of complex systems allows a dynamic view in which the idea of task as frame is converted to the
idea that the task sets the initial state space landscape of the complex system task of action. (LFC, p. 212)

In line-up activities, the framework, at first glance, does not seem conducive to variability because positions and pairs (as well as modes of interaction) are set. Yet in real world practice, pairs are often imperfectly formed as the activity progresses. Some pairs finishing early start participating with other nearby pairs. In cases where line-up students are standing (as opposed to sitting in paired desks), the clean parallel lines give way to clustered groups, often favoring one side of the classroom. These new patterns of interaction emerge naturally; whether the activity can take advantage of them is a challenge for the instructor. The alternative would be to disrupt the new patterns to reset the parallel lines.

In the fishbowl activity, the basic framework envisions incremental changes in the inner circle by individuals opting in. But one often finds not individuals, but pairs and triples dominating the changes; this makes it difficult to continue a conversation in the inner circle. In fact, the fishbowl activity has been observed to degenerate into just two loquacious inner circle teams trading places, locking out other participants. In such cases, rather than an opportunity to participate in L2 conversations, it becomes simply a live conversation observation activity for the blocked, passive outer circle members. There are many ways to address this through intervention, such as asking the active members to rest for a while or reconfiguring the activity into having two inner circles.

3 Freedom

LFC state “Stability and variability around and within system attractors are key constructs in complexity theory” (p. 56). Attractors are patterns that a system tend to settle in (Kauffman, 1995, p. 78). In FFCF, frameworks generate the stability within an attractor, whereas freedom generates variability. In the case where the attractor is chaotic, where small changes in initial states can lead to large differences in outcomes (LFC, p. 57), the system can enter into the edge of chaos regime, about which Kauffman states “the transition between order and chaos appears to be the regime that optimizes average fitness for the whole ecosystem” (1995, p. 230). The principal goal of freedom in FFCF is to induce the edge of

chaos so the class can reach optimal fitness in L2 conversations. LFC (p. 148)
restate how Thelen describes the mechanism of the edge of chaos:

One of the tenets of a dynamical approach is that when the attractor states
are relatively unstable, the system is free to explore new coordinative modes
in response to task demands. Indeed it is this flexibility to discover new
solutions that is the source of novel forms. (Thelen, 1995, p. 91)

The design of activities via FFCF should aim at creating “relatively unstable”
attractor states. In line-up, for example, the constant flow of new conversation
partners helps to discourage stable patterns. Each conversation starts anew, and
may not find a “comfort zone” of a stable attractor within the allotted time of
a line-up encounter. Fishbowl, through its outer-circle/inner-circle exchange
mechanism keeps the inner-circle patterns novel. The conversation within the
inner circle may continue through interlocutor changes but can suddenly change
direction at the whim of new (or existing) inner circle members; the inner circle
conversation rests on a highly unstable attractor.

4 Comparative Encounters

Closely related to comparative encounters are affordances, which LFC
introduce as follows: “what if tasks are seen, not as providing input, which then
migrates piecemeal to inside the learner’s head, but as providing affordances...?” (p.
10; also cf. p. 212). The concept of affordance was applied to language learning
by van Lier (2000) and is defined as follows: “An affordance is an an opportunity
for use or interaction presented by some object or state of affairs” (LFC, p. 22).
Comparative encounters clearly rely on affordances to let students explore the
fitness landscape (Kauffman, 1995, p. 149; LFC, pp. 45–46), as they find better L2
communication techniques through the choices they make in an affordance (LFC, p.
116, p. 126).

Comparative encounters, though having the goal of opening paths to better L2
through interaction as in the Vygotskian zone of proximal development (Vygotsky,
1978), do not always pull up the fitness of the weaker participants. LFC state
... unlike what we understand to transpire in the ZPD of sociocultural theory, in which a learner is enabled by a partner to perform a task beyond his or her current level of competence, complexity theory sees alignment as mutual, a process we have called ‘co-adaptation’, where both the learner’s and the partner’s language resources are transformed through their participation, though not necessarily in a way that is beneficial for learning. (p. 158)

In line-up, especially when a pair is physically outside the sphere of supervision of an instructor, instances of students lapsing into L1 can occur. L1 represents a least-energy path to completing a line-up task, though it contravenes the assumed rule of L2-only communication. In such cases, both interlocutors co-adapt to the L1 strategy. Remaining in L1 need not be the final outcome. If one of a pair uses L1, the partner can choose to stay in L2; the first speaker can then choose to continue with L1 or return to L2. The latter choice may be triggered by the instructor’s proximity to the pair.

In fishbowl, when an inner circle member has a lower L2 level, the other members may try to match the lower level in order to include the weaker participant in the conversation. Another scenario has inner circle members’ conversation devolving into short utterances such as: “Did you?” “Yes.” “What about you?” In cases where the L2 level is low compared to the average level of the class, the chances of finding a fitness peak in the fitness landscape representing the state space (LFC, p. 46) of L2 communication are reduced. Introducing conversation topic cards, to be chosen at appropriate intervals, in the inner circle is an example of how to ameliorate low-fitness conversations: in essence, the topic cards reshape the fitness landscape.

5 Feedback Sensitivity

In terms of feedback, and sensitivity to feedback in particular, LFC (p. 151) mention noticing as a way to develop L2; noticing in the context of second language acquisition is discussed in Schmidt (1990, p. 132, p. 139, p. 143). FFCF activities could promote noticing as one method of feedback sensitivity; for example, in either fishbowl or line-up, the students’ attention could be drawn to a particular language pattern useful for a topic being used. Another type of noticing

is found among the interlocutors: discrepancy.

In the child L1 acquisition work of Tucker & Hirsch-Pasek (1993) and Bloom (1994), the noticing of discrepancies is a key enabler of L1 system development: “the discrepancy that children note between patterns that they encounter and ones that they produce” and the “discrepancy between what the child wants to say and what she or he is able to say” (LFC, p. 124). In terms activity design, LFC state,

In designing task-based, content-based, or theme-based activities..., teachers as managers of learning would want to think about how to adjust the control parameter of discrepancy. The gap between how students want to use their language resources and what the context warrants can provide the impetus for students’ finding, creating, and learning new patterns of language using. In order to create the discrepancy, the activities would always have to challenge learners to exploit the meaning potential of their developing systems in new ways. (pp. 211–212)

Both fishbowl and line-up rely on contextual changes to force students to adapt, through inner circle member changes and partner changes, respectively. The students cannot predict what language will be produced and discrepancies may result. The instructor can enhance the discrepancies by introducing more difficult topics as the activity progresses.

6 Features of Complex Systems

LFC give the following table for the key features of complex systems in applied linguistics (p. 37):

FFCF correlates with this table in the following way. Framework deals with the agents (students) and organization (how students will interact through rules and layout). Freedom deals with dynamics (the leeway given to students). Comparative encounters deal with heterogeneity (differing levels of L2 among the students). Feedback sensitivity deals with adaptation (change in students’ L2). The combination of FFCF within an activity will then, if successful, lead to the emergence of an edge of chaos regime of sustained L2 by the student language community.
7 Conclusion

LFC help to fill in the details of FFCF rather than change any of the four characteristics. For frameworks, activity designers should be aware that frameworks may change as students adapt to the activity. Freedom needs to have unstable attractors so that the interacting students will explore the fitness landscape. Affordances are key to having comparative encounters. Activity designers need to pay attention to how students interact as well as the participants’ relationships with each other. Feedback sensitivity can be achieved by having students notice discrepancies in their language and in what they hear or in what they want to say.

FFCF provides a different set of guidelines for activity design; traditional guidelines are PPP (presentation, practice, production) and MMC (mechanical, meaningful, communicative). FFCF looks at the interconnectedness and dynamics of participants, activities, and context to create sustained L2 language communities. Finally, LFC offer four components (pp. 198–199) as the basis for using complexity science in language teaching: (1) it is all connected, (2) language is dynamic (even when it is frozen), (3) co-adaptation is a key dynamic, and (4) teaching is managing the dynamics of learning. The first is covered by framework, the second by freedom, and the third by comparative encounters and
feedback sensitivity. The fourth was touched upon in the discussion of dynamic frameworks.

**Appendix A**

Line-up, a modified version of the 4/3/2 fluency activity of Nation (1989), has students position themselves in two parallel lines, forming a line of pairs (framework). After a given interval, students change places in order to form new pairs; the changes continue until the end of the activity (framework). While in pairs, students converse on topics designated by the instructor. With partner changes, students encounter new information accompanying the new partner (comparative encounters). Since a student is basically restating what he or she said previously in the opening statement, fluency gradually develops (feedback sensitivity). The instructor can control the interval timing and topics. In a homogeneous L1 class, L2 is maintained by the constant flow of new partners; the interval should be short enough so that the pairs do not drop into L1.

**Appendix B**

Fishbowl (Klippel, 1984, p. 9; Kindt, et al., 1999) has the class sit in an inward-facing outer circle, save for four students who sit in an inward-facing inner circle (framework). The outer circle students must remain silent whereas the inner circle are free to talk (framework, freedom, comparative encounter). An outer circle member may enter the inner circle by a non-negotiable tap on the shoulder of an inner circle member; they exchange seats (framework). The activity name derives from the observing of the inner circle by the outer circle. Even in a homogeneous L1 class, with the scrutiny of the outer circle, the inner circle feels pressure to stay in L2 (feedback sensitivity). Alternatives include having conversation topic cards in the center to re-energize a flagging conversation, or allowing inner circle members to initiate seat changes.
References


