Motivation and Complex Systems Theory: An Exploratory View of the Motivation of Four Japanese University Students

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This paper introduces the results of an innovative, exploratory investigation into the L2 motivation of four Japanese university students combining thematic analysis of interview data and complexity thought modeling. The cognitive focus of many existing conceptualizations of L2 motivation, it is argued, addresses only one aspect of motivation's multifaceted nature. The results of the study presented here indicate that motivation is contingent on interpersonal interaction and social and circumstantial context, including critical life events such as the transition from high school to university. The paper finishes by examining some of the implications of a complex systems perspective for ELT practice and research. One implication is that language learning and the motivation that underlies it might usefully be viewed holistically as a phenomenon intertwined with the individual learner's path through life, rather than primarily as an outcome to be systematically engineered through motivational teaching practice.

本稿では、インタビューデータの主題分析と複雑性思考モデルをもとに、4人の日本人大学生の第二言語学習における動機付けに関する斬新な予備調査の結果を紹介する。ここで主張するように、第二言語学習の動機付けに関する既存の概念化研究の多くは、動機付けというものの多面的性質のわずか一面にしか焦点をあてていない。本稿の研究結果が示すところでは、動機付けは他者との交流と社会や環境という文脈に依存したものであり、そこには高校から大学への進学といった、人生にとって　重大な出来事も含まれる。本稿の終わりでは、英語教育の実践と研究のための複雑性システムへの展望の示唆を検討する。その示唆の一つとして、言語学習とその根底にある動機付

けは、やる気を起こさせる教育実践を通して体系的に構築されたものと見る
よりむしろ、個々の学習者の人生の歩みと結びついた事象であると見るほう
が有益であろう。

If effective language learning depends on "using language for real-life purposes" (Branden, 2006, p. 15), English language education in Japan clearly faces significant challenges: the majority of Japanese people satisfy their day-to-day communicative needs in Japanese. Yet, a child entering elementary school in 2012 who continues on to university will have no choice but to study English for nine years of his/her life. In such an environment, it is perhaps inevitable that some students may at times be "coping with the 'imposition' of having to study a foreign language" (Lantolf, 2000, p. 12) rather than actively learning it. Adding to this problematic situation is the tendency for compulsory classes to focus on preparing students for university entrance exams rather than providing opportunities to foster practical skills. Although Berwick and Ross's (1989) description of the Japanese classroom as a "motivational wasteland" (p. 206) may be extreme, this paper takes the position that this far-from-ideal context needs to be "brought in" to a holistic, situated consideration of motivation, rather than excluded with a view to maximizing the statistical reliability of a given, universal construct. It is to a critique of such constructs to which I now turn.

Critiquing the Mainstream L2 Motivation Paradigm

Mainstream L2 motivation research constitutes a voluminous body of work. Motivation has been tackled from various perspectives: its connection to a drive to integrate with a target language community (Gardner, 1985); its relationship with classroom context (Crookes & Schmidt, 1991); its effect on task-processing (Kormos & Dörnyei, 2004); how it impacts groups (Dörnyei & Murphey, 2003); and how it relates to the self-concept (Dörnyei, 2005). Much of this research has adopted a reductionist view of motivation, using the statistical analysis of questionnaire data as the de rigueur means of investigation. Principled empirical research has therefore taught us a great deal about the motivation of the average language learner of a particular sample in terms of how he or she is composed of

motivational "components." However, as Larsen-Freeman and Cameron (2008) observe, data from a sample "may often describe a process or a functional relation that has no validity for any individual" (p. 145). There is increasingly mainstream acceptance (Chalhoub-Deville, Chapelle, & Duff, 2006) that this fundamental limitation of quantitative methodology, in addition to the superficial nature of the data-set, numerical rather than narrative descriptions, and the artificial nature of the research setting, justifies the wider use of qualitative methodologies operating within post-positivist or relativist conceptual paradigms.

An effective way to illuminate the manner in which motivation interacts with, or emerges from persons-in-context may be a bottom up approach investigating particular learners in particular contexts. It has been suggested that fresh conceptions of motivation will ideally result in a more "dynamic conception of the notion of motivation that integrates the various factors related to the learner, the learning task and the learning environment into one complex system" (Dörnyei & Ushioda, 2011, p. 89). The current study takes up this challenge to view motivation in terms of complex systems theory.

Complex Systems Theory and Motivation

Complex systems theory (CST) is an umbrella term for a number of theories from the mathematical and physical sciences devised to explain the behavior of theoretical, physical and biological systems in which there are "multiple interactions between many different components" (Rind, 1999, p. 105); that is, systems that are extremely complicated. The behavior of such systems cannot necessarily be understood by the analysis of lower-level constituents: reductionist explanation has been found to be untenable both practically and theoretically. The rationale for the use of CST in the social sciences is the idea that there is some value to understanding psycho-social phenomena through the metaphor of the complex system. Like their physical counterparts, psycho-social 'systems' can be seen to display change, emergence (sudden system-wide change), phase shifts (sudden changes in system behavior) and non-linearity (i.e., *a* affects *b* and at the same time is affected by *b*).

The application of complexity theory to L2 motivation is in its early stages.

Dörnyei (2009) draws on complexity theory to look anew at motivation-related cognitive processes; in a position in line with a CST view, Ushioda (2009) argues that the person-in-context, rather than context-independent, abstract variables, should be taken as a basic unit of understanding. Theorists, she argues, should view students as real persons, not theoretical abstractions, taking a holistic view of the relationship between learner, learning outcomes, classroom environment and wider social context.

A CST perspective requires a fundamental reconsideration of the aims of research. The measurement of causal relationships between abstract variables is abandoned in favor of a holistic description of change, context, timescales and variability in order to understand "how the interaction of the parts gives rise to new behavior" (Larsen-Freeman & Cameron, 2008, p. 231). The holistic focus of a CST approach and the necessarily exploratory nature of research at this early stage clearly favor innovative qualitative modes of inquiry.

Analysis

Since a great deal of published research is conducted within a quantitative paradigm, it seems appropriate to give a brief account of the concepts of reliability and validity and how they are to be understood in a qualitative approach.

Reliability, in the sense of consistency of measurement, is irrelevant to a qualitative, exploratory study seeking "to elicit the responses of…[participants]… at a specific time and place and in a specific interpersonal context" (Finlay, 2006, p. 320); replicating the study, even using the same participants, would lead to different data being elicited. In a similar way, validity, in the sense of measurement of objective truth, is considered a problematic concept, since truth and objectivity are slippery concepts when applied to data formed from opinions, recollections, interpretation and evaluation. Instead of reliability and validity, "relatability" (Bassey, 1981), or "the extent to which the details are sufficient and appropriate for a teacher [or researcher] working in a similar situation to relate his decision making to that described…" (p. 82) is a more relevant ideal characteristic of qualitative research. The researcher needs to explain clearly the justification for the

procedures followed, and supply a sufficient amount of data in the presentation of the research so that the reader can make an informed opinion as to the degree to which the analysis and conclusions drawn are coherently formulated, persuasive and justified. If this is done sufficiently well, it is hoped that the research will resonate with readers' own experiences, knowledge and thinking (Elliott, Fischer, & Rennie, 2010), thus enriching the collective understanding of a particular phenomenon.

Participants

Sampling was opportunistic, the only stipulation being that participants were proficient enough in English to discuss motivation-related issues in sufficient detail. This can naturally be expected to self-select participants with higher motivation, but this is seen as unproblematic since it is not the intention of this study to draw statistically supported generalizations about a larger population. Interviews were conducted in the spring term of the academic year 2010-2011 at a private university in the Kansai region. Participants were members of a twice-weekly, second-grade, intensive academic writing class (taught by the author) intended to prepare them for a six-month study abroad trip to Canada. The researcher informed the students that he would like to conduct interviews in order to learn about their experiences of, and motivations for, learning English. Four students volunteered to be interviewed. Participants had roughly similar levels of English, with paper-based TOEFL scores at that time ranging from 470 (Satomi) to 497 (Machi) (pseudonyms are used throughout this paper). Their profiles are as follows.

Kensuke (20, male): An ex-*yankee* (delinquent youth), Kensuke changed his outlook towards life and behavior on the occasion of his friend's mother's death when he was in high school. A serious student with a penchant for intense discussion, he plans to become an English teacher in the future.

Machi (22, female): Machi's path to university was unconventional by Japanese standards: she took two years out between high school and university. At the time of her interview her goal was ultimately to study gender studies in Norway.

Satomi (20, female): Satomi is a quiet member of the class. A hesitant speaker of English, she has the tentative ambition to work in the area of environmental protection in the future.

Shiro (20, male): Shiro is a softly spoken student whose interest in English was sparked by an early study-abroad encounter. He is currently considering whether he might be able to put his English to use as a teacher in the future.

Procedure

Written, informed consent was obtained from students prior to the commencement of the interviews, detailing that the research would be anonymous, and that all recordings, transcripts and research notes would be stored under password protection. Individual interviews were conducted in a university classroom at a mutually agreeable time, recorded on two IC recorders. Interviews were loosely structured in order to facilitate a relatively deep exploration of salient concepts. They started with the question 'Why did you decide to study abroad in Canada?' Subsequently, various motivation-related issues and the participants' experience of the Japanese English education system were discussed. Core questions were as follows:

- What do you want to accomplish in Canada?
- Tell me about your experience learning English at junior high school and high school.
- How do you feel about English education in Japan?
- What is English for you?

If the participants were struggling to express something in English, they were asked to repeat it in Japanese for clarification (at the time, or through re-listening to the recording).

Transcription and Analysis

Interviews were transcribed, then coded according to procedures set forth in Gillham (2005):

1. Sections deemed relevant to motivation were highlighted, and copied to a spreadsheet in the form of a matrix which facilitated examination of

participants' statements.

2. Excerpts were arranged (and rearranged through an iterative process) into themes through repeated reading of the relevant sections of the transcripts and listening to the recordings in order to identify salient trends in the data.

By printing out this matrix on multiple pages I was able to get a table-sized overview of the entire data set, which could then be rearranged into more satisfactory categories. With the relatively small amount of data I felt it was unnecessary to utilize more sophisticated, computerized aids to data organization and analysis.

In the CST overview, particular features of the data covered by the thematic analysis were interpreted in complexity terms. Deductive use was made of a 16-step process called complexity thought modeling (CTM) (Larsen-Freeman & Cameron, 2008) which was developed to allow researchers to conduct thought experiments making use of complex systems ideas and tools. Given the nascent nature of a complex systems approach to the understanding of motivation, it was considered preferable to use this existing, albeit not yet widely-used, framework as a basis on which to conduct the analysis. It is shown here in reduced form, modified for the purposes of this study:

1. Identify components of the system (agents, processes, subsystems).
2. For each component, identify time scales and levels of social and human organization.
3. Describe relationships between components.
4. Describe how the system changes over time, including possible emergence or self-organization across time scales and/or levels of human organization (adapted from Larsen-Freeman & Cameron, 2008, pp. 70-71).

During the analysis, it became apparent that the difficulties in applying CTM to motivational phenomena were considerable, given that thinking about one aspect of a complex system entails simultaneously considering multiple other aspects. For this reason, the results are presented under headings broader than those included in the CTM procedure, yet still non-mutually exclusive: *time scales*, *relations between components*, *system change*, and *context dependence* (see

Complex Systems Theory Analysis).

Thematic Analysis

Four themes of consequence for an understanding of the motivation of the participants were identified:

1. English is a means to an end.
2. Motivation comes from outside the classroom.
3. Motivation is contingent on circumstances, changing over time.
4. Resentment and resignation towards English education in Japan.

In the following sections, transcriptions are presented in modified form omitting false starts, extended pauses, and potentially confusing language use. In excerpts in which the researcher participates, the abbreviations 'I' (interviewer) and 'P' (participant) are used. Japanese is shown in italics. Unless indicated otherwise, excerpts are not translated.

English is a Means to an End

Participants give various reasons for studying English: the desire to talk to a foreign friend (Shiro); because it may potentially be useful in a future career as a researcher hoping to reach a wider audience by publishing in English (Satomi); to study gender issues in Norway (Machi); or to find employment as an English teacher (Kensuke). The data suggest that participants view English as a tool to be used toward what might conventionally be called both instrumental and integrative ends. It can also be viewed as a means through which to achieve personal growth or, in humanistic terms, self-actualization (Rogers, 1961). For example, as Satomi says:

> English is a way of communicating with foreigners. If I can communicate, I can widen my perspective. If I can widen my perspective I think there are many things that I think I can deal with, and have less trouble in life [translated from Japanese].

Satomi's motivation to learn English is tied to other motivations, such as

the desire to widen her perspective and "reduce trouble in life". This intertwined nature of L2 motivation can be seen among the other three participants too. Kensuke's motivation, for example, is closely connected to his career plans.

> K: When I was young I wanted to be a teacher. My father is a Japanese language teacher so I was influenced by him.
>
> I: Can you give more information? Why a teacher?
>
> K: Because I hate desk work all the day and I really like to take care of children and I'm not good at English but I want to be an English teacher because [there are less employment opportunities for] math teachers and science teachers and history teachers…and recently elementary schools started to teach English, so [the] Japanese government [is] looking for more English teachers.

Not only is Kensuke's motivation entwined with other motivations and the sociocultural context, but sufficient knowledge of them appears to be a prerequisite for a deeper understanding of his L2 motivation, as opposed to a superficial description in terms of existing psychological constructs.

In addition to the more pragmatic reasons for learning English such as future career plans, some of the respondents appear to derive genuine satisfaction from interaction in English.

> Machi: Speaking [to] other people and making them understand my English is interesting for me.

> Kensuke: If I inform my information to foreign people I will become very happy and glad because I can notice that I can speak English, I can talk to foreign people with my ability.

However, this is not a linguaphile's love of English; the fundamental enjoyment appears to derive from sharing information and ideas with people and/or the gratification of progress towards an instrumental end. Thus, both in

terms of the long-term future goals and short-term interpersonal interaction, motivation to learn English appears to be grounded in social and circumstantial context, intertwined with other motivations, and aimed toward supra-linguistic ends.

Motivation Comes from Outside the Classroom

Participants appear to have been motivated by various types of stimulating encounters outside of class. Shiro, for example, is motivated by his friendship with an American teenager.

> I want to speak English well. I want to be a good speaker of it, because when I was a seventh [or] eighth grade I made a friend in America so I want to speak with him and his family.

In Machi's case, the stimulating encounter was with one of her father's books on gender issues in Norway. She subsequently became interested in the idea of studying there, and the motivation to learn English developed as part of this process. Combined with this 'pull' was a 'push' in the form of dissatisfaction with her circumstances in Japan.

> I am bored to study in Japan and I want to study gender in Norway…and in Norway I have to talk in English. Norway is very [progressive] in gender policy so I am interested in it. I am very bored in this country so I want to go abroad to study something. Kyoto is too close to my family. I want to [live farther away] from my family.

Satomi's motivation to learn English is, in part, contingent on her interest in preserving the local scenery in her hometown. If she were to publish research in English rather than limiting herself to Japanese, she reasons, she would be more empowered to preserve local scenery.

These observations indicate that motivation to learn English can spring from a wide variety of issues unrelated to those with which teachers commonly concern

themselves. Interestingly, none of the participants identified the classroom as a source of motivation.

Motivation is Contingent on Circumstances, Changing over Time

The participants' perception of English and motivation to learn it appears to change over time along with changes in maturity and circumstances. Shiro's original motivation to learn English was to communicate with his foreign friend (James) better. However, at the age of 20—at a time when many students of his age are thinking about future careers—his friendship with James is no longer the only reason to learn English.

> S: I said my main motivation is James...but maybe that changed recently... if I can speak English I may [get] a good job with English. If I hadn't had the experience with James and his family I think I [wouldn't have studied] English hard.
>
> I: Right, so he was a factor.
>
> S: Yes...the most important factor...mmm maybe not important, but if I hadn't met him I would [have taken] a different course [at university] for example mathematics.

Like researchers, Shiro struggles to make sense of the nature of his motivation. Another example of the contingent nature of motivation can be seen with Kensuke, for whom a change in circumstances accompanying the move to university resulted in dissatisfaction with his English proficiency.

> I: When you came to university, you started to become interested in speaking?
>
> K: Yes.
>
> I: Why?
>
> K: Because I noticed that I couldn't speak English. In my major I must use English...[all the time] so now I feel *kuyashii* [mortified] because I can't

speak English well.

This motivational change is presumably one of many accompanying the move to university: changes in lifestyle, study requirements, personal freedom, living arrangements, relationships with peers, and more besides. A holistic understanding of the interplay of these changes can enrich our understanding of Kensuke's motivation to learn English.

Resentment and Resignation toward English Education in Japan

To researchers familiar with Japan, students' views towards English education will come as no surprise. Two responses to the question "How do you feel about English education in Japan?" are shown with two examples below:

Shiro: I think the system of English education is not good. Because teachers teach students grammar we come to understand the grammar but we can't use it in speaking. It makes no sense.

Kensuke: When I was in junior high school and high school I hated [English] because I must study it for exams so I didn't enjoy it.

Reservations about teaching methodology and a pervasive focus on testing are common to all participants. However, Machi's disaffection is particularly interesting because she takes issue with students being required to engage in the 'pretense' of learning. She recounts with bitterness the glorification of test achievement she saw in her high school and, with reference to her current university classes: "Students are very bored; they don't study; ...[they just come to school for] tests...I think university [should be] to study...but they don't..."

Machi's case is illustrative of the demoralizing effect that test-centered education can have on some students. It is no surprise that her L2 motivation is sustained primarily outside of school. Incidentally, such criticisms are by no means limited to English education. With reference to his favorite subject,

history, Kensuke states, "I just memorize for exams so I didn't learn the real... terrible [process] of war."

This observation reminds us that the problem of an over-emphasis on testing is by no means limited to English education. It may however be easier to automatically equate test results with learning in other subjects; with English, failure to learn practical skills is manifestly obvious no matter how well the learner does in tests.

Complex Systems Theory Analysis

The four themes identified above provide the foundation for the subsequent CST interpretation in terms of: time scales, relations between components, system change and context dependence.

Time scales

Larsen-Freeman and Cameron (2008) note that "[c]ertain events widely separated in linear time may be more relevant to meaningful behavior now than other events which are closer" (p. 241). The data suggest that participants' years-old experiences and long-term plans are integral aspects of L2 motivation in the present, their influence operating over timescales that dwarf shorter-term perspectives of the task, lesson, or curriculum. This may caution researchers/ practitioners against taking an overly short-term view of teaching and learning; only when there is a degree of congruence between long-term aims and short-term (often test-related) objectives so pervasive in the current educational landscape, is motivation likely to emerge in the classroom.

In Japan, university entrance is commonly understood to have a negative washback effect on pedagogical practice in junior high school and high school (Murray, Gao, & Lamb, 2011). For the participants, pre-university classes appeared to either dull their motivation or to be irrelevant to it; they relied instead on motivational sources beyond the classroom. A CST perspective might support the proposition that the focus on entrance exams is inherently a barrier to learning for many students — that many learners who succeed at English do

so *despite*, rather than *because of* a focus on tests. Although entrance exams are potentially a long-term influence, they are aimed principally toward university entrance rather than English proficiency itself. Further, any influence they have suddenly ceases to exist upon matriculation. As a motivational influence they are therefore unlikely to compare favorably with more deeply-held, consistent personal motivations such as day-to-day communicative need, an integrative orientation, or other identity/self-related motivations. Language learning would more ideally be sustained by this second group of motivation types that, by their very existence, make language learning a worthwhile activity.

From a theory-building perspective, the way in which such long-lasting, situation-specific, institutional influences such as university entrance are, by definition, excluded from the universal motivation constructs surely severely limits such constructs' utility in explaining L2 motivation in Japan in general, let alone the motivation of individuals.

Relations between Components

The concept of non-linearity in complexity theory maintains that a substantial perturbation to a system may sometimes have no lasting influence on its trajectory but, conversely, a small perturbation may at times lead to substantial system-wide change. In line with the concept of non-linearity, the participants appear to be among the minority who are able to sustain L2 motivation regardless of the vast amount of time spent in drudgery in the high school classroom. At other times, seemingly inconsequential events—such as Machi's chancing upon a book on gender studies in Norway—held longstanding consequences for motivation.

Perhaps the most important implication of non-linearity to pedagogy is to call in to question the notion that a teacher can be held responsible for a student's motivation to a significant degree, i.e. that motivating is something that the teacher "does" to students. It could even be argued that a CST view renders the very idea of compulsory English education in the current environment in Japan as a substantial perturbation to the system that is unlikely, en masse, to have a proportionately significant effect in terms of proficiency gains; in layperson's terms, it might be a waste of time for many of the students involved.

A CST view may support the contention that the best way for teachers to deal with this situation would be to deemphasize institutional barriers to learning such as an excessive focus on test results, a transmission-based view of teaching and learning, compulsory attendance and segregated course subjects. Relevant concepts include the humanistic notion of self-directed learning (Rogers, 1961), critical pedagogy (Shor, 1992), and problem-based learning (Barell, 2007). Rather than focusing on inducing change that the teacher wants to see, as per current motivational thinking (Dörnyei, 2001), these paradigms attempt to set conditions in which students take charge of their own learning.

From a theoretical/methodological perspective, the way in which a CST view requires a consideration of multiple, disparate contextual factors may make it a rather intimidating paradigm within which to work. In its defense, CST advocates might argue that there is not, nor should we expect there to be, an easy way to arrive at a deep understanding of psycho-social phenomena.

System Change

In CST terms, a "phase shift" refers to significant change in system behavior such as Kensuke's resolve to study English harder at university. Such change can be visualized as a change in the direction and/or velocity of movement in a journey through a multidimensional "state-space" (in Kensuke's case, the high-school-university transition). The idea of phase changes and state spaces may prove to be useful heuristic tools for visualizing how motivation-related aspects of the learner system exhibit change as learners go through life finding themselves in different places with different needs and plans for the future. As Larsen-Freeman and Cameron (2008) explain:

> [M]otivation might...help keep the learning system moving across its state space, avoiding attractors such as preference for watching television over doing homework. In classrooms, the action and intentions of the teacher may work...[to]...control parameters that take the system of learners and teacher forward to new learning experiences (p. 54).

A less conceptually intimidating concept through which to make sense of Kensuke's realization would be the 'critical event' (Flanagan, 1954): a substantial, unplanned, perhaps surprising personal experience with consequences for English-learning (adapted from Webster & Mertova, 2007, p. 77).

Whichever metaphor is utilized, an understanding of change will be contingent on an understanding of context. In the case of the participants, the transition to university life appears to have been a positive one in terms of L2 motivation. For others, it is no doubt positive in that it frees them, to a degree, from an oppressive system which compels them to study, or pretend to study, something of little relevance to their everyday lives. It may be the case that an event-specific category such as the high school-university transition is a more useful conceptual dimension of L2 motivation in certain contexts than a more traditional category such as the ideal L2 self (Dörnyei, 2005).

Context Dependence

According to a CST view of psycho-social phenomena, the learner cannot be separated from context for the purposes of measurement or explanation. The context of most relevance to teachers is naturally the classroom context. The thematic analysis reminds us that the classroom may play a relatively minor contextual role for some; if learning is disconnected to the more fundamental needs outside of the classroom, motivation is unlikely to emerge.

One of the advantages of a CST approach may be that its holistic focus will encourage researchers to examine the hidden ideologies which govern conventional views of psycho-linguistic phenomena. For example, a great deal of writing on motivation takes an entirely uncritical view of the notion that it is acceptable for students to be motivated into liking English. A CST view will hopefully help researchers to question the assumptions they hold regarding language education, including the powerful axiomatic belief that English is a panacea and that compelling students to study it is ethically unproblematic.

From a theoretical perspective, heterogeneities such as personality and ability may underlie motivation, but they do not seem to be at the forefront of the lived reality of motivation among these learners. Instead, motivation appears, at least

to an extent, to be a function of context. In addition, individual circumstances and experiences may at times be unpredictable, unexpected, or even completely random. For example, in the interviewers that this researcher has conducted, most of which are not presented here, the proportion of successful English learners who attribute their motivation to a chance intercultural encounter at an early age is intriguingly high.

Limitations of the Study and Future Research Directions

In its reliance on interview data alone, the preceding analysis is tentative and exploratory. The inclusion of novel conceptual and methodological ideas and the slightly convoluted use of two analytical frameworks cut into the space that would ideally be reserved for the foregrounding of transcript data. This, in turns means that the process behind the claims was less transparent, and the claims themselves less coherently supported and persuasively argued than would ideally be the case. It is hoped that future CST-influenced research can develop a more finely tuned focus of investigation and a more concise procedure and format for the investigation of motivation and presentation of research results, respectively. Doing so would maximize the practical use to those researching motivation in Japan and elsewhere.

One particular aspect of motivation which researchers may wish to investigate further is its contingency on critical events and the contexts in which they occur. Within general educational psychology, for example, numerous studies address how elementary school and junior high school negatively affect the motivation of incoming students (Shunk, Pintrich, & Meece, 2007). The transition to university in Japan may be an interesting backdrop against which to investigate the circumstantially and socially contingent nature of motivation.

In general terms, a CST approach appears to guard against overspecialization in both a theoretical and practical sense. It suggests the importance of maintaining sensitivity to the context of learning and critical awareness of the limitations of universal approaches or quick fixes to theoretical or pedagogical issues. It will be interesting to see whether a CST approach can be developed, or whether a CST perspective is inherently antithetical to any type of standardization beyond

its use as a heuristic prism for the reinterpretation of complex phenomena. A starting point for researchers wishing to find out would be to try to engineer Larsen-Freeman and Cameron's (2008) CTM procedure into something a little more user-friendly.

Conclusion

This paper began by arguing that much existing L2 motivation research is conducted within a cognitive/positivist paradigm, limiting its scope for studying motivation as a socially situated, multifaceted phenomenon. Complex systems theory concepts such as non-linearity, system change, and context-interdependence proved useful in explaining the unique motivations of the four participants. They aided understanding of how, for example, the chance discovery of a book on women's rights in Norway could have a disproportionately large influence on one participant's motivation, while something seemingly as important as six or more years of compulsory English lessons could be largely irrelevant to the motivation of the same participant. They also helped to explain how motivation is grounded in contexts such as the influential transition from high school to university life.

However, the results indicate that understanding motivation empirically, as a multifaceted, socially situated phenomenon is far from straightforward. It remains unclear whether the methodology used here can lead to the development of a concrete set of practical procedures of general use to researchers. The CST paradigm is brimming with challenges, both to existing conceptualizations of phenomena within applied linguistics and to researchers who may struggle with new terminology, research aims, and methodologies. It is perhaps a little early to proclaim, as does Van Geert (2007), that it is "the quintessential future approach to human action, cognition and behavior, including language" (p. 47). For researchers who wish to move beyond reductionist explanations of complex social phenomena, however, it appears promising.

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