

16 Learner Archetypes and Signature Dynamics in the Language Classroom: A Retrodictive Qualitative Modelling Approach to Studying L2 Motivation

Letty Chan, Zoltán Dörnyei and Alastair Henry

This study explores the use of ‘retrodictive qualitative modelling’ (RQM), a novel approach to second language (L2) research proposed by Dörnyei (2014) that involves the identification of learner archetypes and motivational patterns through empirical investigation. The method reverses the traditional way of conducting research; it first examines outcomes – that is, the end-states – and then traces back the developmental trajectories leading to these outcomes. Situated in a Hong Kong secondary school, we started our project by first asking a teacher focus group to identify salient learner archetypes in their classrooms (Years 7 to 9) and, on the basis of these descriptions, we then conducted in-depth interviews with a prototypical learner from each group. As a result, we gained insights into the ‘signature dynamics’ of the motivational system associated with each prototype. Our focus in this chapter is on evaluating RQM in action. First we report on the processes in which teachers identified learner archetypes and thereafter offer an in-depth analysis of the system dynamics of one of these students. In the final discussion, we list the main methodological lessons that we have learnt from applying RQM.

Complex Dynamic Systems and RQM

As has been pointed out in several chapters in Part 1 of this volume, we face serious methodological challenges when we conduct empirical research within a dynamic systems vein. At the most general level, the fundamental issue is that the outcomes of the operation of dynamic systems – particularly ones that involve human beings – are difficult to predict as it is virtually impossible to know in advance how the various factors will interact with one another (Haggis, 2008). This has been explicitly highlighted by Diane Larsen-Freeman and Lynne Cameron (2008: 75) who draw attention to the fact that ‘the behaviour of a complex system is not completely random, but neither is it wholly predictable’. Limited predictability and the inability to enumerate potentially relevant factors in advance of conducting research pose very real problems for researchers. It was against this backdrop that Dörnyei (2014) proposed RQM as a possibly meaningful way forward. He suggested that researchers can capitalise on the system’s *self-organising capacity* – the propensity to increase the orderly nature of the initially transient, fluid and nonlinear system behaviour – summarising this basic assumption in the following way:

As a result of this self-organisation process, many – if not most – complex systems display a few well-recognisable outcomes or behavioural patterns (e.g. crystallised types, skills, schemas or achievement configuration) rather than the unlimited variation that we could, in theory, anticipate in an erratic system. The existence of these systematic outcome patterns, in turn, opens up a meaningful avenue for researching dynamic systems by means of ‘*retrodictive qualitative modelling*’. (Dörnyei, 2014: 84–85)

Although ‘self-organisation’ may sound like an abstract concept, the actual phenomenon is in fact likely to be familiar to classroom practitioners; whereas system dynamics could in principle produce indefinite variability in a classroom, with an infinite range of emerging learner types, in reality we tend to find a certain degree of predictability and a limited range of patterns in most situations. So, for example, even if we visit a classroom in a very different learning context from the one we are used to, before long we will start to recognise familiar learner behaviours and attitudes. These recurring patterns are related to the fact that systems tend to self-organise components into a few preferred modes of behaviour or functionally useful units. Van Geert (2008) has neatly illustrated this idea using the fictional characters Alice and the Queen from the children’s story *Through the Looking Glass*. Although there is an infinite number of possibilities for Alice to walk to the Queen, some paths will become more salient as they will be trodden more often and, over time, the number of possible paths to the Queen will be

reduced to a small number of trajectories actually used. Indeed, this limited variability has recently been highlighted by Byrne and Callaghan (2014: 197) as a major consideration in analysing complex systems:

The key aspect of complex systems which gives us some purchase on resolving this dilemma [of how to predict future outcome states in complex systems] is that they do not have an infinite set of possible future states but rather a limited set of more than one but less than too many to comprehend.

Thus, RQM utilises the regulating force of self-organisation that makes system behaviour predictable and therefore researchable. The key word is *retrodiction*, in that RQM reverses the traditional way of conducting research; first we identify the end-states (or outcome-states/prototypes) in system behaviour and then work *backwards* in a retrospective manner to uncover the developmental trajectories that led to those settled states. Thus, instead of the usual forward-pointing ‘pre-diction’, we pursue ‘retro-diction’ by tracking back to the reasons why the system might have ended up with a particular outcome, thus producing a retrospective qualitative model of its evolution.

In an attempt to operationalise the concept of RQM for classroom investigations, Dörnyei (2014) has proposed a three-step research template. The first step involves the identification of salient student types in the classroom, which are equated with attractor states in the system’s overall phase space. There are several possible ways to identify such prototypes, including the statistical procedures of cluster analysis (cf. Byrne & Callaghan, 2014: 160) and Q methodology (cf. Irie & Ryan, this volume). In this study we followed a qualitative approach that employed teacher focus groups. We asked the participants to brainstorm salient student types and create a rich description of each archetype with a list of characteristics containing cognitive, emotional and motivational components (e.g. motivated + low-proficiency + unconfident). In doing so teachers engaged with *social categorisation* processes. In social psychology, ‘social categorisation’ is understood as the creation of social categories by ‘putting some people into one group based on certain characteristics and others into another group based on their different characteristics’ (Aronson *et al.*, 2013: 379). The process is highly useful – one could argue, indispensable – when educators have to interact with numerous language learners in large classes on a regular basis, because such categorical thinking can simplify the person perception process (Allport, 1954). Thus, instead of viewing individuals in terms of their unique attributes and characteristics, teachers can construe them in categories according to the information stored in long-term memory (Macrae & Bodenhausen, 2000), helping them therefore to make sense of the demanding and complex environment of educational settings.

Once a set of relevant prototypes has been established, we need to identify actual students who would fit each archetype, a process that is usually referred to as *critical case sampling* (Dörnyei, 2007). If the identification of the prototypes involves an initial quantitative survey, with data subsequently processed by, for example, cluster analysis, it is possible to select students from the statistically distinct groupings (provided of course the questionnaires contained identification data). This approach was adopted, for example, by Henry (2011) in investigating third language acquisition in Sweden, with a special emphasis on analysing the interference of the L2 (English). In the current study, we followed an alternative process whereby we asked the students' teachers to nominate candidates for each prototype (an issue we will return to in the final discussion). Following this initial nomination process, in a second phase, selected students are invited to take part in a semi-structured interview – or a set of interviews – to obtain a rich description of the prototypical cases. Finally, in the third phase, the transcribed interviews are subjected to qualitative data analysis in order to identify the significant components of the classroom's motivational setup and to shed light on the main underlying dynamic patterns – or the system's *signature dynamics* – that produced the observed system outcomes. The current study draws on this three-stage template to examine how RQM methodology works in actual practice and to provide insights into the analytical process that underlies the model's key element: the identification of a motivational system's signature dynamics.

Methodology

Participants

The research took place in a Hong Kong secondary school. In the first stage of the study – the identification of learner archetypes – the participants were six English teachers (one male and five females). In the second stage – identifying the components and signature dynamics of motivational systems for individual students fitting these archetypes – the participants were seven Chinese students (five boys and two girls). The students were all born and brought up in Hong Kong and were all native speakers of Cantonese. At the time of the study the students were enrolled in Years 7 to 9 and between 13 and 14 years old. The school they attended is an aided secondary school¹ where the use of English is greatly encouraged in various ways, including using English in morning assemblies and announcements, organising English drama workshops, international exchange days and immersion programmes abroad. There were two strands in the English instruction – the 'elite' and the 'normal' stream – and students could move between strands, up as well as down, depending on their progress.

Data collection

After obtaining necessary consent to conduct the research, in the first phase of the study a number of English teachers were invited to take part in a focus group interview. The teachers were informed of the procedures and that their identities would not be revealed in subsequent reporting of the research. Six teachers agreed to participate in the focus group interview, which was held in March 2011. Here they identified seven salient learner archetypes among the students in the school (Years 7 to 9). Having done this, they then nominated typical students for each archetype.

Drawing on this list of names, students from Years 7 to 9 were invited to take part in semi-structured interviews (these cohorts not being under the immediate pressure of public exams). Each student was interviewed on two occasions, the initial, longer interview being followed by a shorter interview where, drawing on brief analyses of the data, the aim was to verify whether the findings were in agreement with the participants' experiences and viewpoints (Hesse-Biber & Leavy, 2011). The interviews, which were conducted in Cantonese by the first author (designated 'LC' in the excerpts below) took place in a quiet meeting room and lasted for between 30–90 minutes. The digital audio-recordings were transcribed and subsequently translated into English by the first author.

Besides asking broad questions about the interviewees' experience of learning English at school, their changing attitudes and motivation, their L2 learning habits, the influences of their family and their imaginary view of the English speaker/user they would like to become, students were also asked to plot their motivation on a simple graph. This was designed to help them to indicate the levels of motivation at various points in their learning history and to give them an opportunity to focus on possible underlying reasons for their motivational evolution (cf. Henry, Chapter 19, this volume).

Data analysis

To ensure the accuracy of transcription, the interview corpus (of approximately 145,000 words) was listened to twice. The translated transcripts were then read several times by the authors as a means of gaining familiarity with the data (Harding, 2013). Analysis of the data was carried out in two stages. In the *first stage*, we read the transcripts making brief notes, identifying keywords, highlighting important points and through these processes, generating ideas. Having obtained a general idea of the data, we carried out a content analysis to examine the various factors that affected each participant's L2 motivation in different phases of their academic lives, including environmental, social and personal factors. Relevant parts were highlighted and coded into different categories, and then the interaction between the categories was further examined. We have also looked at the commonalities and differences

across participants (Gibson & Brown, 2009) to identify overarching patterns and possible links between learner types.

The current chapter focuses on the *second stage* of the data analysis, which involved a close-grained examination of a single case with the aim of identifying the corresponding signature dynamics. This analysis was carried out using an interpretive approach similar to that outlined by Smith and Eatough (2007) (see also Henry, Chapter 19, this volume). In analysing the transcript of our focal participant, we used the abstractions of self-determination theory (Noels *et al.*, 2000) and complex systems theories (Larsen-Freeman & Cameron, 2008) as a compass, transforming our initial notes into theoretically resonant themes, in particular identifying instances indicating shifts from one attractor state to another, perturbations triggering these shifts and features of emergence.

Results

Phase one: Identifying learner archetypes

At the beginning of the teacher focus group, the first author introduced the aims of the study, its method and the schedule of the session to the teacher participants. In order to facilitate the identification of learner archetypes, a list of adjectives in English (both positive and negative) was presented as a set of illustrative descriptors designed to reflect learners' emotions, cognition, motivation and behaviour. A specific example of a possible learner archetype was also provided and the participants were encouraged to think of typical students representative of this type. After the introduction, the teachers were first asked in pairs, and then in the whole group, to brainstorm and come up with other possible archetypes. The descriptions of the seven learner archetypes generated by the teacher focus group are as follows.

- (1) *A highly competitive and motivated student, with some negative emotions.* According to the teachers' focus group, students in this archetype are intelligent, motivated individuals with a noticeable competitive edge. They tend to have high expectations of their teachers and expect to be given new and challenging activities and materials in class. They reflect on things to a great degree and tend to be somewhat nervous.
- (2) *An unmotivated student with lower-than-average English proficiency.* This archetype is unique in a way because, although these students are placed in an elite English class, their proficiency in English is not comparable with their peers and they tend to be lower achievers in general. They are described as quiet, sombre and lacking confidence. In comparison to their elite class peers, they are perceived to be 'lazy', 'not hardworking' and that their schoolwork tends to be rather 'slapdash'.

- (3) *A happy-go-lucky student with low English proficiency (usually found in the Year 7 remedial classes).* The teachers' focus group described this archetype as represented by someone who is highly motivated in general and enjoys going to school, but someone who at the same time struggles with English and keeps having to ask questions in order to understand what is going on in the class. Although their grades are relatively poor, their emotional stability and happy-go-lucky disposition allow them to move beyond their failures. As a result, setbacks in their schoolwork do not seem to frustrate them.
- (4) *A mediocre student with little L2 motivation.* According to our teacher informants, this is a very common archetype. Despite having the abilities to achieve, students belonging to this category will often only do the minimum required of them owing to a lack of motivation. In English classes they are receptive, well-behaved and can function well without any problems. They nearly always pass their tests. Nonetheless, they are perceived as not taking their learning particularly seriously and not possessing clear expectations for themselves. They are stable in their emotions, tending to be calm and placid.
- (5) *A motivated yet distressed student with low English proficiency.* This archetype was described as being largely represented by quiet female students who tend to be hardworking, diligent and motivated. Students in this group tend to complete the tasks teachers ask them to do, submit all their homework on time and take comprehensive notes in class. However, they are also slow and rather rigid in their learning. What few learning strategies they have (e.g. their methods of revising for tests) tend to be ineffective. Consequently, these learners are unhappy with their work in that it fails to produce any enduring results. It is not uncommon for students in this archetype to be brought to tears when receiving a test paper and realising that the considerable effort they have invested in their studies has not borne fruit.
- (6) *A 'perfect' English learner.* Teachers saw this archetype – usually found in the elite classes of the school – as the L2 student who is intelligent, independent and focused. Such learners have a great sense of responsibility and are willing to carry out the tasks assigned to them; they are the type of students who, the teachers say, will readily give them a set of notes when the teacher has misplaced his or hers. They are confident, highly motivated, emotionally stable, have a genuine interest in the subject and engage eagerly in autonomous learning (e.g. they keep a vocabulary log, write grammar notes and keep a journal in English).
- (7) *An unmotivated student with poor English proficiency.* This student type is very similar to the second of the archetypes in several respects, including being reserved, withdrawn, lazy and lacking motivation. Students belonging to this category are also said to be unhappy and lack confidence in their abilities. Teachers see them as difficult and their work as

substandard. What makes them different from the second archetype is that they have lower-than-average language learning abilities even in a regular (i.e. non-elite) class.

Phase two: Identifying students for each archetype

Having identified the learner archetypes, teachers were given a list of the names of students in the English classes they were teaching at the time of the study and invited to nominate students (a) who best represented each archetype, and (b) others who resembled the prototypical learner (to act as reserves in cases where the best candidate might not be willing to participate in the interviews). During this phase, the teachers discussed the possible candidates among themselves and reviewed the suitability of their selections. Between two and nine learners were selected for each prototype, with one or two identified as the most prototypical learners. Table 16.1 provides descriptive information on the final student sample comprising three prototypical (Chris, Alex and Rex) and four prototype-resembling learners (Helen, Mary, Saki and Danny).

Phase three: Mapping motivational trajectories and identifying signature dynamics

The final phase of RQM aims to produce two related outcomes: a set of signature dynamics associated with the initially identified archetypes and, based on this set, a dynamic overview of the learning environment under investigation. The second objective goes beyond the scope of this chapter and therefore the focus below will be on the first aim, generating a retrospective account of the system dynamics of a single student typical of one of the teacher-generated archetypes. Although for this purpose we could have selected any of the seven students, our choice was Chris, a student identified by his teachers as being in the *'highly competitive and motivated student, with some negative emotions'* archetype (and also one of the three best-fit prototypical students). Even though the archetypes that teachers identify may vary somewhat from one class to the next (each class being a unique dynamic system), and may differ substantially from one cultural context to another, Chris, we feel, is a student that many teachers will recognise. We begin by offering a *thumbnail portrait* of Chris and his family background. We then describe his *motivational trajectory* from his first encounters with English, moving on to finally identifying the *signature dynamics* of his motivational system.

A thumbnail portrait

Chris, who was aged 14 at the time of the interviews, lives with his grandparents in an urban residential area with mainly public housing estates in the part of Hong Kong known as the New Territories. His parents and

Table 16.1 Emerging learner types in a teachers' focus group discussion

<i>Prototype (pseudonym)</i>	<i>Motivation</i>	<i>Cognition</i>	<i>Emotion</i>	<i>Behaviour</i>	<i>Quotes</i>
A highly competitive and motivated student, with some negative emotions (Chris)	Motivated	High ability in English, has a lot of expectations of teachers and of themselves	Anxious, not cheerful, negative in their way of thinking	Loves comparing self with others, likes competition	'I really wanted to be the best. I was combative and I had a desire to compete and win.'
An unmotivated student with lower-than-average English proficiency (Helen)	Not hardworking, not particularly motivated	Low in ability especially when compared with students in a good class	Reserved, not happy, not confident in English or any other subjects, proud to be in an elite class, inferiority complex	Insufficient engagement, careless with her homework	'When I have to concentrate on something that is relatively boring, I will become stiff. I really need to relax my brain at that moment.'
A happy-go-lucky student with low English proficiency (Alex)	Motivated generally and also in English	Less able, low proficiency	Cheerful	Asks many questions, inflexible, active, needs clear guidelines	'The worst fear is not having any friends. Sometimes, when I am revising and this comes to my mind, I'm quite scared.'

<p>A mediocre student without much L2 motivation (Rex)</p>	<p>Learns only when pushed, does not do his homework seriously</p>	<p>Mediocre in achievement</p>	<p>Neutral in emotions, gentle, lucid</p>	<p>Obedient, attention-seeking, would try to make some jokes in class, funny</p>	<p>To put it bluntly, I do my work superficially. I only work hard in front of others, but I won't when they are not there.'</p>
<p>A motivated yet distressed student with low English proficiency (Mary)</p>	<p>Hardworking, motivated, will learn autonomously</p>	<p>A weak learner</p>	<p>Empathetic, sad after receiving a test paper</p>	<p>Quiet, obedient, rigid, responsible, fossilised in their learning strategies</p>	<p>'In the last test, I cried. It was also because I was scared to be told off by my parents.'</p>
<p>A 'perfect' English learner (Saki)</p>	<p>Has intrinsic interests in learning English, serious approach to learning</p>	<p>Good memory, has acquired various learning strategies</p>	<p>Emotionally stable, confident</p>	<p>Detail-minded, organised, independent in everything, capable of handling most tasks, helpful, well-behaved</p>	<p>'I would learn five new words and I read English every day. I would always have something with me to read.'</p>
<p>An unmotivated student with poor English proficiency (Danny)</p>	<p>Not hardworking, not particularly motivated, withdrawn</p>	<p>Low in ability even in a regular class</p>	<p>Reserved, not happy, not confident in English or any other subjects, proud to be in an elite class, inferiority complex</p>	<p>Insufficient engagement, careless with his homework</p>	<p>'I didn't want to do my homework, but I had no choice.'</p>

younger brother live in Tung Chung, a town on one of Hong Kong's islands. Perhaps because of the pressure of raising two children, his parents decided that Chris should be brought up by his grandparents. Although Chris does not mention any contact with his parents, he has, in addition to his grandparents, a close relationship with an uncle, who, along with his grandmother, has been instrumental in his education and development. While his grandmother *'has been telling me off since I was young'*, his uncle offers more constructive advice, functioning as an important role model. In particular his uncle has advised Chris to read as many books in English as he can. Similar advice has been received by another important adult in Chris's life, his personal tutor, whom he has had since Year 3. Like his uncle, she advocates the importance of reading: *'Her advice is to read widely. She says the reason why English proficiency is so low among students is because they don't read extensively. They only care about what is required from the school'*. Like many boys of his age the world over, Chris enjoys playing digital games, sometimes at the expense of other activities, such as reading books and doing homework. Sometimes, he says, *'I just want to read everything quickly so that I can play computer games. There's a sense of addiction'*. He is musical, playing both the piano and the guitar, from which he gets particular pleasure, saying that *'when you have loads of homework to do, if you can play the guitar, you will feel less pressurised'*. From a young age he has been attending private English classes run by the British Council.

Chris's motivational trajectory

From our interview data, we present five extracts that illustrate not just the motivational trajectory over time, but also the interactions between different system components. Chris suggests that, as the years have gone by, his motivation has increased continuously:

[Extract 1]

In primary school, I felt bored when I had to read long passages. But because I have built a strong foundation, I naturally didn't think it was that difficult in secondary school. I feel increasingly more interested and my motivation keeps growing.

Although giving the impression of a steady increase – and it is here worth noting that the upward line he drew on the graph (Figure 16.1) has an increase/plateauing pattern – this general trend is somewhat belying. Looking more closely at the interview data it becomes clear that both the intensity of his motivation and its sources have fluctuated over the years.

Chris's first encounters with English were, he recalls, not particularly positive. Reading in class was not something he enjoyed, *'my concentration was not so good, so when I had to read a long passage, I felt really tired'*, he says. At home his grandparents' attempts to expose him to English – *'I remember that*

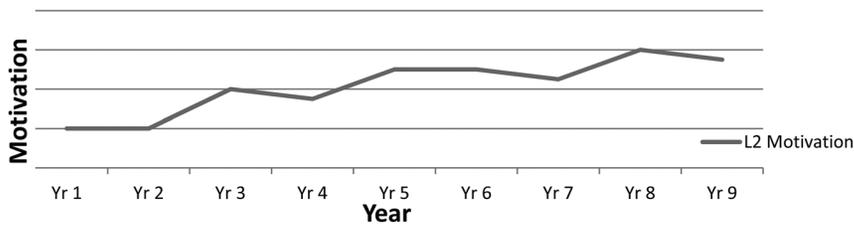


Figure 16.1 Motivation graph describing the evolution of the level of Chris's motivation

my family forced me to watch some foreign cooking programmes – were not met with enthusiasm. Despite the lack of appeal of TV cookery shows and the boredom he experienced in primary school, Chris nevertheless describes to the interviewer that this point in his life was the start of an interest for English. It is also back in primary school where he believes his *'strong foundation'* developed. Contrasting his learning in and outside of school in these early days, Chris reflects on the fact that he felt much more motivation in the classroom. This, he explains, was because it was here that he had an opportunity to compete:

[Extract 2]

Chris: I was OK in class, but my learning motivation was extremely low at home.

LC: Extremely low.

Chris: It was a lot higher at school. . . . There were competitions with classmates. Because there were competitions, there was no reason why I should just sit and do nothing, so I became more attentive.

This competitive streak, Chris remembers, blossomed in Year 3 when the teacher began to give regular quizzes. Not only would Chris and his classmates compete to get the best marks, there was also competition to see which of them could complete the tests in the shortest time. This self/peer-generated competition, Chris says, was very enjoyable, far more so than the less intense but more boring lessons in Years 1 and 2:

[Extract 3]

Chris: Then, we would try to finish the questions as quickly as possible.

LC: You had to compete against time? This started from Year 1?

Chris: No, from Year 3.

LC: What do you think about this?

- Chris:** It was really fun! You could practise the speed of your writing.
- LC:** Did you have to do this on the blackboard?
- Chris:** No, you had a notebook and you wrote . . . continuously. Working on it continuously. But in Years 1 and 2, it was a lot more relaxed.

As Chris explains, his level of motivation continued on its upward trajectory during Years 4, 5 and 6. Although in Years 3 and 4 he enjoyed the competitive environment of the classroom, invariably earning top marks on the tests, his real interest lay in computer gaming. Consequently he did not devote too much time to his studies. Even though he did not have a lot of homework at this time – meaning that there was more time for gaming – English homework was still an unenjoyable chore. A turning point however came when he was in Year 4/5. Normally at the top of the class rankings in English, Chris’s perception of himself as the class’s star performer received a blow when on an exam several of his peers gained better marks:

[Extract 4]

- Chris:** I remember that I failed my exam once in Year 4 or 5.
- LC:** How did that affect you?
- Chris:** It wasn’t that bad actually. I was previously ranked either first, first runner-up or second runner-up in Years 4 and 5. It was like . . . in one exam, if I can remember. . . I fell behind and was ranked sixth or seventh. . . . So I started reflecting whether I was on the right track with regard to the way I studied.
- LC:** I see. How did you feel?
- Chris:** When I got my exam report, I remember crying for a little while.
- LC:** Oh! You were feeling unhappy, right?
- Chris:** Yes. Then, I started regretting why I had played computer games before; why wasn’t I hardworking and so on . . .
- LC:** I see. How did this reflection affect you?
- Chris:** In Years 5 to 6, I remember that I started to become really hard-working. I paid attention in every single lesson.

A sobering experience, Chris goes on to explain how, pretty much from this time onwards, he has focused much more on learning English. As he explains, the disappointing exam result impacted not just on his approaches in class, but across a range of learning behaviours. He tells how he began to self-monitor his learning, to focus much more on what was going on in the

classroom, reading much more out of class and, as a consequence, developing greater self-confidence.

Continuing in this new found study mode, Chris talks about how his motivation increased again when, in Year 7, he transferred to a new English-medium secondary school:

[Extract 5]

- LC:** This is an English school. Were there any big changes when you started studying in a secondary school?
- Chris:** When I was in Year 6, I didn't know whether I would be able to adapt in secondary school. But when I came here, and then I realised that it wasn't so hard to adapt. And I didn't really have the desire to compete in Year 7. . . . And my family said, 'Now that you are in secondary school, if you can be ranked under the twentieth, you are doing really well'. So, I was taking it easy and not trying my best. I didn't really have to fight to be number one. So, I was taking it easy and was relaxed. I didn't have much pressure.
- LC:** You didn't have much pressure. Would you say that you weren't really paying a lot of attention? Really taking it easy?
- Chris:** I was really taking it easy, but since . . . but since I came first in a few of the subjects, I started to be scared.
- LC:** That was Year 8 at that time?
- Chris:** Year 7 . . .
- LC:** How many subjects did you come first? When did that start?
- Chris:** Since the first term.
- LC:** Since the first term, you were ranked first in some of the subjects?
- Chris:** So . . .
- LC:** Is this the ranking of the whole year?
- Chris:** My year. So, I started to be scared at that point. I hadn't imagined that I would get such high marks.
- LC:** Really? Right. I want to ask you . . . when you got good grades, how did you feel?
- Chris:** I haven't thought about it.
- LC:** Were you surprised? Would that be it?
- Chris:** I couldn't believe that when I started studying in secondary school, everyone was a Band One student, and I could still get the highest mark. That was really incredible. Since then, I was studying seriously.

Levelling off at a high level for the remainder of Year 8, Chris says that recently – now in Year 9 – his motivation suffered again, momentarily at

least, when he did not come top of the class on an exam and how, as before, it caused him to reflect on his approach to learning and the effectiveness of the different strategies he employs.

System components and signature dynamics

Having traced the nature and intensity of Chris's motivation, we now turn our attention to the system's dynamics. The essence of the RQM approach involves uncovering the critical underlying mechanisms associated with typical system outcomes, that is to say, the system's signature dynamics (Dörnyei, 2014). Shedding light on the dynamics of Chris's motivational system, our account begins with an examination of initial conditions.

Initial conditions

Simply put, initial conditions are the state that the system is in at the time the investigation begins (MacIntyre & Gregersen, 2013; Verspoor, this volume). In our case, this means identifying the attractor state the motivational system occupies at the time Chris started English in Year 1. As we can see in Extract 1, Chris does not recall his early encounters with English as being particularly enjoyable. Dutifully ploughing through long passages in class and being forced to watch cookery programmes at home, he describes feeling '*really bored at that time*'. Extrinsically motivated, Chris's approach to learning is characteristic of forms of introjected regulation where, even though the pressure to put in effort is internally generated, it takes the form of a need to live up to external evaluative standards (Noels *et al.*, 2000). For Chris, the imperative is to do that which his family (grandparents, uncle and teachers) expect of him.

As Verspoor (this volume) makes clear, the impact of initial conditions on the system's future development will be dependent on whether or not it is in an attractor state. If, at a given starting point, the system is lodged in a deep-sided attractor basin, initial conditions can have an enduring impact on subsequent development. In Chris's case, at the start of school his motivation to learn English (and, we suspect, other subjects too) is strongly rooted in the desire to maintain self-esteem by conforming to socially derived normative standards. Indeed, one of the most striking things to emerge from the interviews is that, other than providing a route into higher education and prestigious employment (Chris has various notions of becoming a university professor or a writer), he gives no expression to ideas about speaking English in social situations in the future. Nor do we find any examples of intrinsic motivation of the type where the individual engages in an activity for the pleasure and satisfaction of understanding something new, satisfying their curiosity or exploring the world (Vallerand, 1997). While the journey of the motivational system across the state space is one of fluctuations, the initial conditions continue to have a strongly determining effect, the system tending regularly to gravitate back to the powerful attractor state of living up to externally imposed, internally accommodated evaluative standards.

An essential underlying mechanism: The periodic movement between different attractor states

Even though, as we have seen, Chris's motivation changes across the period, with sometimes changes in motivated behaviour being quite marked, a pattern seems to emerge where the system moves between a particular group of attractor states.

(a) *Movement to a new attractor state: The introduction of quizzes in Year 3.* A change in Chris's motivation is evident in Year 3 (Extract 3). From this point onwards, rather than a duty, learning becomes fun. However, it is not the learning activities in class that appear as more engaging or personally meaningful. Nor does Chris mention the teacher's approach as having any particular impact on his motivation. Rather, it is the introduction of assessment in the form of in-class quizzes and the competitive environment to which they give rise, which together have a perturbing effect, pushing the system into another part of the state space.

The paradox of testing bringing about increased pressure and fun at the same time can be linked to what German psychologist Karen Horney (1937: 188–189) has termed *hypercompetitiveness* (or neurotic competitiveness). As Horney explains, a hypercompetitive individual 'measures himself against others, even in situations which do not call for it'. Not only do these individuals want to accomplish more than others, they also desire to be exceptional and attempt to achieve these ends even when this might involve harm to others or to themselves. Although Chris is not competitive to the extent of being neurotic, his disposition is not unlike what has been termed *academic hypercompetitiveness* (cf. Bing, 1999). He engages with English because of the excitement generated by the challenge of a test, and the satisfaction and sense of accomplishment in surpassing his peers, both in terms of accuracy and response speed. From this time onwards, the system periodically shifts into and out of this attractor state, a part of the state space embodying two of the fundamental characteristics of intrinsic motivation, namely achievement (engaging in an activity for the satisfaction of accomplishment) and stimulation (engaging in an activity to experience pleasant sensations) (Vallerand, 1997).

However, it is important to note that even though the emergent behaviour following on from the phase shift triggered by the introduction of quizzes has an enduring quality, competitiveness being the hallmark of Chris's motivation, this does not mean that the desire to live up to family/social expectations – the system's initial condition – is overridden. Rather, as we can see in the interviews, the stimulus of competition and the desire to maintain self-esteem by conforming to family/social expectations, function as twin cyclical attractors between which the system moves. As Larsen-Freeman and Cameron (2008) and Hiver (Chapter 3, this volume) point out, in some cases systems will periodically move between a number of different attractor states. Known variously as *periodic*, *cyclical*, *closed loop* or *limit-cycle* attractors, these states represent areas in the state space between which the

system regularly oscillates in a periodic loop. Consequently, as Hiver (Chapter 3, this volume) explains, ‘patterns emerge when events or behaviours repeat themselves at regular intervals’.

(b) *The emergence of a new cyclical attractor: The fear of failure.* Although throughout the period the system oscillates between the twin attractor states of *stimulation* (deriving from competition) and *self-esteem maintenance* (the need to live up to family and social expectations), at various points other phase-shift triggering perturbations take place creating new patterns of movement across the state space.

Chris identifies two particular events as having an impact on motivated behaviour prominently linked to reactions to failure. At a point in time in Year 4 or 5 (he can’t remember exactly when) he recalls the experience of ‘failing’ an exam (Extract 4). The other experience was, when switching school to the English-medium secondary school in which he is now enrolled, he realises that success – coming top of his year in this larger, more challenging environment – can be a double-edged sword in that it generates new and more demanding expectations to live up to (Extract 5). In both cases these experiences function as perturbations that jolt the system into another part of the state space. Downstream from these perturbing events new behaviours – the self-monitoring of learning, reductions in the amount of time spent playing computer games, reading more widely and focusing more in class – begin to emerge.

While these new forms of motivated behaviour indicate that a phase shift has taken place, the attractor states to which the system gravitates do not represent radically different areas of the state space. Indeed, the attractors themselves bear a close resemblance to those already identified. Moreover, as the interviews reveal, the shift to these attractor states is not permanent and at various times the system reverts back to the attractor states previously occupied. This is particularly evident when Chris talks about how his uncle became more important in his life in the period during Years 8 and 9, and how he has tried to model his approach on his uncle’s advice; in these instances the system appears to revert back to the self-esteem maintenance attractor.

Signature dynamics

To sum up, the signature dynamics we observe can be seen as the movement of the system between three cyclic attractors; *self-esteem maintenance* (the need to live up to family and social expectations by being a good student), *stimulation* (deriving from processes of competition) and *fear of failure* (not achieving at a level both he and others have come to expect). The movement between these cyclic attractors seems to take the form of a closed loop of periodic movement (Larsen-Freeman & Cameron, 2008) between states that represent two of the most fundamental forces in motivation, namely approach and avoidance drives. As MacIntyre and Serroul (this volume)

explain, desires to approach situations that trigger positive emotions and to avoid those that generate negative affect are basic human tendencies; these tendencies underpin the system dynamics we have identified here.

Discussion

The primary objective of this study was to carry out an empirical investigation using the RQM approach. Therefore, the discussion will be structured according to the three phases of the RQM template, first addressing the question of learner archetypes and then examining issues concerning the student interviews and the identification of signature dynamics.

Learner archetypes

A key aspect of RQM is the assumption that even complex systems, such as a learner group in a language class, display a limited number of patterns owing to the system's self-organising capacity. One of the central issues in this respect is whether learner archetypes exist in teachers' minds. The answer is affirmative: the ease with which teachers in the focus group agreed on a number of seemingly well-known learner types indicates that, instead of thinking of 30+ unique cases in a class of 30+ students, they perceived the student body along a smaller number of categories, thereby confirming the existence of settled attractor states. This is in line with the general process of social categorisation mentioned earlier and it is also likely to resonate with many classroom practitioners' intuitive awareness of 'familiar' types of students, even when they start working in a new learning environment; indeed, as Dörnyei (2014: 90) pointed out, 'there is wisdom in the saying that an experienced practitioner has "seen it all"'. However, we should note that some of the seven learner prototypes produced in this study appear to be idiosyncratic to the specific sample, which raises the question of how much the specific categorisation process applied in our study influenced these outcomes.

Having interviewed learners associated with each archetype, we have found that the students nominated by the teacher focus group did not always neatly fit the description of the archetypes. This mainly reflects a methodological concern that the prototypical participants nominated by the teachers did not always agree to be interviewed (and we had to resort to 'prototype-resembling' students). Furthermore, we found that even one of the prototypical students did not match the archetype description, which could be a function of the *actor-observer effect*, according to which 'attributions differ as a function of the perspective of the attributor' (Robins *et al.*, 1996: 375). Since students and teachers have different roles and perspectives, they may have access to different types of information from which to construct perceptions and form attributions.

A further issue regarding the archetypes concerns their stability. While dynamic systems are never fully static, they tend to settle into temporary attractor states (cf. Hiver, Chapter 3, this volume). The research potential of focusing on archetypes lies in this relative stability in that it can provide a certain degree of predictability. Our data show, however, that even within a period of a year, some learners belonging to one archetype shifted into another state as a result of a restructuring of the attractor basin relevant to the particular person. As Byrne and Callaghan explain, such relocations to another domain – that is, phase shifts – can be seen as characteristic features of the overall evolution of a complex system: ‘Change is change of *kind*’ (Byrne & Callaghan, 2014: 59; emphasis ours).

The observation of phase shifts may not necessarily be bad news for researchers, because studying these movements might constitute a fruitful direction for understanding the dynamic motivational tapestry of the classroom. Examining the shifts may also lead to the understanding of how archetypes can be intentionally ‘manipulated’ – in our case by motivating learners – to change the system’s makeup. Indeed, the finding that individuals are not fixed in a particular in-class archetype, but can shift to another state, may serve as an encouragement for educators who are dealing with demotivated and struggling L2 learners, because it suggests that they can be moved into a re-motivated state if appropriately principled guidance is provided.

Finally, let us return to the question as to the extent to which the emerging archetypes are generalisable. Even given the various reservations concerning the nature and stability of archetypes mentioned above, it seems to us that defining archetypes as the first phase of RQM did indeed fulfil the role of producing purposive sampling for the subsequent qualitative interviews. It was reassuring to find that when we looked at each selected learner’s case in detail, we soon arrived at generic topics and issues that have received a great deal of attention in the literature, thereby providing evidence that the archetypal learners represented generalisable phenomena.

Student interviews and signature dynamics

One of the important lessons of the study is that it proved to be more difficult than expected to identify prototypical students for every archetype. Because the focus group assigned only one or two typical students for each archetype, we had to sometimes resort to examining slightly less typical students. This is one of the reasons why we have found that the students nominated by the teacher focus group did not always provide a close match with the description of the archetypes. We can conclude, in retrospect, that it would have been useful to have spent more time in the field with the aim of identifying and verifying the prototypical students. An important task for future research in this respect may be to explore whether teacher-defined

archetypes differ from the ‘learner types’ identified by the students themselves.

If we look back at the interview process in general, it seems that the qualitative interviewing phase relied primarily on the students’ accounts. (Although we did interview two further teachers at this stage, our focus there was on general issues concerning the classrooms without trying to obtain specific data to complement the interviewed students’ stories.) It is likely to be the case that a more balanced picture would have been achieved by integrating learner and teacher accounts, particularly regarding the performance of academically less successful students. In a similar vein, triangulating the data by conducting classroom observations, as well as examining more than one student associated with each archetype, might be beneficial in producing a thicker description of the attractor states in the system.

Regarding the nature of signature dynamics, we found that defining the exact nature of what constitutes a ‘signature dynamic’ raised some important questions. Should we, for example, restrict a signature dynamic to some crucial aspect of a case – for example, as was the case with Chris, the matching of a competitive classroom structure with a competitively oriented student who wishes to prove himself – or should we perceive a signature dynamic more like a trajectory that indicates the ongoing direction of system behaviour? Alternatively, would it perhaps be more fruitful to describe signature dynamics through the characterisation of the attractor basin associated with a student’s motivational makeup? In other words, Dörnyei’s definition of signature dynamics as ‘main underlying dynamic patterns’ (Dörnyei, 2014: 87) leaves open the question of *patterns of what*? Indeed, it may be that investigating dynamic patterns from various perspectives can lead to a more sophisticated understanding of learners’ signature dynamics.

At this point we may also ask a further, critical question: Would it have been possible to understand the composition of, and fluctuations in, Chris’s motivation *without* adopting a dynamic systems approach? In other words, can a complex dynamic systems approach generate insights that other methodologies cannot? While we recognise that a single study can offer only limited basis for generalisation, our answer to these questions is affirmative. Without an appropriate toolkit (cf. MacIntyre & Serroul, this volume) and an understanding of the functions of attractor states – particularly the ways in which a complex dynamic system oscillates between cyclic attractor states within a closed loop of periodic movement – we would not have been able to identify and conceptually account for the changes Chris describes in his account of his evolving motivation. It is exactly because complex dynamic systems theory enables us to *identify* and *conceptualise* such systematic patterns and periodic fluctuations in learner dispositions that we see it as a powerful framework for future L2 motivation research.

Finally, an implicit assumption in Dörnyei’s (2014) proposal of RQM was the belief that each archetype can be matched with one dynamic pattern,

hence the term ‘signature’ dynamic. It is, however, also conceivable that there are several well-worn pathways leading to the same broad outcome. Here, too, only further research involving multiple interviewees linked to an archetype can offer an answer. Nevertheless, the generic nature of the dynamics identified in Chris’s case suggests that even if there *is* more than one pattern leading to an attractor state, or limited number of attractor states between which a systems oscillates, the total number is likely to be small; an assumption that is in accordance with our earlier argument concerning the limited variability in complex systems.

Conclusion

The application of RQM in the present study reveals both its strengths and its limitations. On the positive side, the RQM template generated a systematic research process, resulting in rich data that shed light on the underlying issues from various angles. There is no doubt that we gained a close understanding of the specific learning context and its dynamic characteristics. On the other hand, however, we have also encountered methodological challenges in identifying the principal attractor states and the corresponding learners. Nonetheless, as Dörnyei argues, one of the least convincing aspects of qualitative methodology is the justification of the broader relevance of qualitative results in terms of some vague ‘resonance’ with readers’ experiences, and it is in this area where, at its best, RQM can offer improvement; the template can be useful in highlighting aspects of system dynamics that are so essential that they can reasonably be expected to be echoed in other situations. In other words, as Dörnyei (2014: 90) states, RQM offers a research template for deriving essential dynamic moves from idiosyncratic situations in a systematic manner; it ‘utilises the basic emerging commonalities in the dynamically changing social world’. Thus, although our study has not implemented the original ideas to the full, the good news is that the results and experiences we have gained still maintain the possibility that RQM can fulfil its potential in future research.

Note

- (1) This was a Band 1 EMI (English as a medium of instruction) school and ones in the first banding (out of three bandings) have the best in-take of students.

References

- Allport, G.W. (1954) *The Nature of Prejudice*. Reading, MA: Addison-Wesley.
- Aronson, E., Wilson, T.D. and Akert, R.M. (2013) *Social Psychology* (8th edn). New Jersey, NJ: Pearson Education.
- Bing, M.N. (1999) Hypercompetitiveness in academia: Achieving criterion-related validity from item context specificity. *Journal of Personality Assessment* 73 (1), 80–99.

- Byrne, D. and Callaghan, G. (2014) *Complexity Theory and the Social Sciences: The State of the Art*. New York: Routledge.
- Dörnyei, Z. (2007) *Research Methods in Applied Linguistics*. Oxford: Oxford University Press.
- Dörnyei, Z. (2014) Researching complex dynamic systems: 'Retrodictive qualitative modelling' in the language classroom. *Language Teaching* 47 (1), 80–91.
- Gibson, W.J. and Brown, A. (2009) *Working with Qualitative Data*. London: SAGE.
- Haggis, T. (2008) Knowledge must be contextual: Some possible implications of complexity and dynamic systems theories for educational research. *Educational Philosophy and Theory* 40 (1), 158–176.
- Harding, J. (2013) *Qualitative Data Analysis from Start to Finish*. London: SAGE.
- Henry, A. (2011) Examining the impact of L2 English on L3 selves: A case study. *International Journal of Multilingualism* 8 (3), 235–255.
- Hesse-Biber, S.N. and Leavy, P. (2011) *The Practice of Qualitative Research* (2nd edn). Thousand Oaks, CA: SAGE.
- Horney, K. (1937) *The Neurotic Personality of Our Time*. New York: W.W. Norton & Company.
- Larsen-Freeman, D. and Cameron, L. (2008) *Complex Systems and Applied Linguistics*. Oxford: Oxford University Press.
- MacIntyre, P.D. and Gregersen, T. (2013) An idiodynamic approach to studying language learning and use. Paper presented at the American Association of Applied Linguistics annual conference, Dallas, TX.
- Macrae, C.N. and Bodenhausen, G.V. (2000) Social cognition: Thinking categorically about others. *Annual Review of Psychology* 51, 93–120.
- Noels, K.A., Pelletier, L.G., Clément, R. and Vallerand, R.J. (2000) Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning* 50, 57–85.
- Robins, R.W., Spranca, M.D. and Mendelsohn, G.A. (1996) The actor–observer effect revisited: Effects of individual differences and repeated social interactions on actor and observer attributions. *Journal of Personality and Social Psychology* 71 (2), 375–389.
- Smith, J.A. and Eatough, V. (2007) Interpretive phenomenological analysis. In E. Lyons and A. Coyle (eds) *Analysing Qualitative Data in Psychology* (pp. 35–50). London: SAGE.
- Vallerand, R.J. (1997) Toward a hierarchical model of intrinsic and extrinsic motivation. In M.P. Zanna (ed.) *Advances in Experimental and Social Psychology* 29 (pp. 27–360). San Diego: Academic Press.
- van Geert, P. (2008) The dynamic systems approach in the study of L1 and L2 acquisition: An introduction. *The Modern Language Journal* 92 (2), 179–199.