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'The one who is out of the ordinary shall win':

Research supervision towards publication in a Chinese hospital

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1. Introduction

Research supervision and research education success have been issues of extensive interest for educators at the tertiary level. Much attention is being paid to what happens in the university setting (for example, Casanave & Li, 2008; McCallin & Nayar, 2011). At the same time, research mentoring in medical contexts, which involves senior clinician researchers and medical students or junior clinician researchers, has also been an issue of long-standing interest in academic medicine (for example, DeCastro, Sambuco, Ubel, Stewart & Jagsi, 2013). Yet although there seems to be some consensus on what characterises a good mentor and what an effective mentoring relationship might be like (Casanave & Li, 2008; Zerzan, Hess, Schur, Phillips & Rigotti, 2009), surprisingly little is known as to how research supervision and mentoring actually unfolds in its natural settings, especially as to how it is manifested through the mentor's verbal communication. In Asia and elsewhere in the world, given the widespread requirement for research students to publish — especially at the doctoral level across the disciplines of science and medicine — including in English-medium international journals (for example, Barbero, 2008; Huang, 2010; Li, 2016), understanding the process of research supervisory communication will have theoretical and pedagogical implications. The present chapter aims to make a contribution in this direction by reporting a study on

how the director of the Orthopedics Department at a major Chinese hospital mentors his students through verbal communication to push the novices to work hard in scientific research and publication.

I will first give a brief overview of the potential benefits for medical students of engaging in research and the challenge that their supervision poses in Chinese hospitals. I will then outline the theoretical background of the study, based as it is on some tenets drawn from cultural-historical activity theory [CHAT] (Engeström, 1987, 2000, 2001, 2009; Engeström, Miettinen & Punamäki, 1999).

1.1. Medical students as researchers and the publication requirement for Chinese medical students

Literature in medical education suggests that it is professionally significant for medical students to engage in research and publishing. It has been acknowledged that research prepares medical students for the practice of medicine, for 'the ability to understand and integrate new knowledge into clinical practice is a necessary quality of good physicians' (Parsonnet, Gruppuso, Kanter & Boninger, 2010, p. 405). Research also develops the students' critical skills in reading the literature, analysing the data and writing for publication, and cultivates positive attitudes towards future research (Dyrbye, Thomas, Papp & Durning, 2008; van Eyk et al., 2010). Furthermore, medical students can contribute to the research productivity of a host institution, and, in a more instrumental light, research-based publishing will both give the students advantage in a competitive job market and facilitate their career path selection (Griffin & Hindocha, 2011).

Chinese postgraduate medical students attached to major teaching hospitals are generally under the dual pressures of their university's requirement for them to publish ('publish or no degree') and to participate in a clinical internship. To meet their graduation requirement, a master's student is usually expected to publish one Chinese article in an indexed national journal, while a doctoral student should publish two English-medium articles in international SCI [Science Citation Index] journals, or one such article plus two domestically indexed papers (Li, 2014a). From the point of view of supervision, the great number of postgraduate medical students attached to the country's teaching hospitals poses a major challenge for their full-time clinical supervisors in terms of providing quality research supervision, as these doctors generally have busy clinical schedules (Li, 2014b) and their research experience and level of commitment to research vary widely (Liang & Chen, 2009). In this situation, the strong leadership of a research-minded senior supervisor would seem to be crucial for potential research productivity.

1.2. Theoretical background

As a collective human activity, research supervision can be usefully examined by drawing upon cultural-historical activity theory [CHAT], or activity theory (Engeström, 1987; Engeström et al., 1999; Leont'ev, 1978; Vygotsky, 1978). Under activity theory,

collective human activity is the basic unit of analysis and an activity system can be represented in a dynamic triangular structure (as seen in Figure 9.1, to be described in detail in Section 2.1), which sets up dialectal relationships between a number of nodes. In the upper part, there are the *subject* (the actor whose point of view is adopted in the analysis); the *object* (the problem space), which is continuously being transformed into the *outcome*; and the *tools* (material or symbolic artifacts mediating the object-directed activity). In the lower part of the structure, there are the *rules* (the explicit and implicit norms/values that govern the activity), the *community* (the socio-historical environment of the activity), and the *division of labour* (the different roles of the participants and their power relationship). Contemporary activity theory places an emphasis upon studying the interacting relationships between activity systems (Engeström, 2001). Such interacting relationships may take a variety of forms. For example, two activities may have a partially shared object (Engeström, 2001), or there may be two interwoven activity systems, with each being altered somewhat as a result (Li, 2014b; Prior & Shipka, 2003). Alternatively, there may be a 'flow' of elements (which occupy the nodes of the triangular structure described above) between activity systems (Barab, Barnett, Yamagata-Lynch, Squire & Keating, 2002; Engeström, 2009).

In addition, a hierarchical view of activity posits that object-directed activity comprises sequences of goal-oriented *actions* (Engeström, 2000; Leont'ev, 1978). The literature has addressed both academic and professional contexts in illustrating (Engeström, 2000) or applying (Li, 2013, 2014b; Barab et al., 2002) the hierarchical view of activity. Previous research has mostly focused on physical actions as being constitutive of an activity — for example, actions taken by a student in fulfilling a written assignment, or by a group of students in fulfilling a classroom task, or by a doctor in diagnosing a patient (Li, 2013, 2014b; Barab et al., 2002; Engeström, 2000). However, it may also be possible to apply the hierarchical view of activity to studying rhetorical actions. As Bazerman (1997) pointed out, the structure of an academic text reflects 'the goal of many of the supporting actions' (p. 297). Similarly, a supervisor's commentary during a student's oral presentation at a research meeting represents a form of structured oral discourse comprising sequences or strings of goal-oriented rhetorical actions, such as asking the student a question, giving a suggestion on data interpretation, or pointing out a major problem in the student's research design. What gives coherence to these actions is the macro-level motive-carrying object (Engeström, 2000) — for example, progress in research and quality work.

2. The study

In exploring a supervisor's verbal communication in the activity of research supervision at a Chinese hospital, I was guided in my study for this chapter by two research questions:

1. What neighbouring activity systems provide the main sources of reference in the supervisor's mentoring of his student supervisees? (That is, what neighbouring activity systems does the research supervision activity interact with?)

2.   What rhetorical actions constitute the supervisor's commentaries during his students' presentations at research meetings?

The study was part of a larger project that I conducted during April through to December 2012 at the Orthopedics Department of a major Chinese hospital located in east China, in order to investigate how research takes place in the department (Li, 2014a, 2014b). Convenience facilitated by a personal contact and the fact that the department was reputable clinically and research-wise had led to my selection of the research site. Thus the research site has the quality of being 'intrinsically interesting' so that it merits study in its own right (Denscomb, 2007, p. 41).

The department consists of four specialist sections, each headed by a chief doctor and the largest by the department director. In the following section, based on the data gathered in the larger project (see Li, 2014a, 2014b), I will briefly examine the research supervision activity in the section headed by the department director through the lens of CHAT, before describing the data collection and data analysis procedures adopted for the study.

2.1. The department director and the research supervision activity in his specialist section

The director was in his mid-50s and was a reputable surgeon in his specialist field in the country. After a decade of clinical experience, and upon obtaining a higher medical degree in the early 1990s, he went overseas and accumulated many years of clinical experience before joining the present hospital in the early 2000s. Under his strong leadership, his department, and in particular his specialist section, had earned a strong reputation in research. At the time of the study, the section had an attachment of 17 postgraduate students (all male, in their 20s), about two-thirds being master's students and the rest doctoral students. The director was referred to by the students as 'the big boss', and his doctorate-holder research-active colleagues in the section, for whom there was also an English publication requirement of two SCI papers every three years (Li, 2014a), were known as 'the second-tier bosses [supervisors]'. These latter numbered about seven at the time of the study: all were male, and all but one, who was in his 40s, were in their 30s. Adopting the triangular structure of activity system depicted in the literature (Engeström, 1987; Engeström et al., 1999), Figure 9.1 presents the activity system of research supervision in the director's specialist section, from the point of view of the director.

The *object* in Figure 9.1 is portrayed as quality research and efficient publication. 'Quality' here pertains to publishing in high-ranking international and national journals; and efficiency applies to both the students and the second-tier supervisors when meeting the publication requirements. Both quality and efficiency contribute to the credentials of the section and the department. Publication requirements and data collection protocols constitute salient *rules*; while the *community* covers the specialist section led
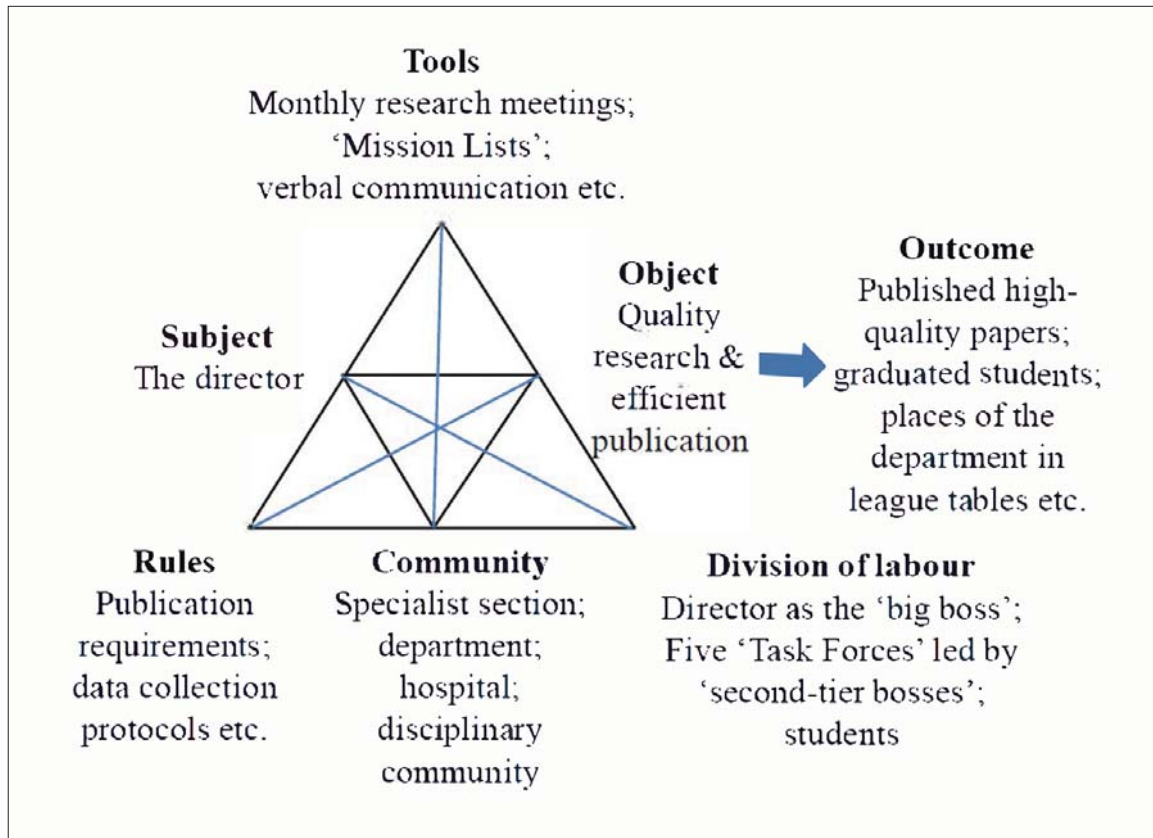
Figure 9.1: The activity system of research supervision in the director's specialist section.

by the director, the department, the hospital and the wider disciplinary community. The *division of labour* reflects the section's multigenerational supervisory system (Rose, Rukstalis & Schuckit, 2005), with a set-up of five 'Task Forces' (as they were called in the section), each focusing on a research direction led by a second-tier supervisor and including a group of medical students at master's and doctoral levels. Monthly research meetings, 'Mission Lists' (the original English title used for the documents), and verbal communication are listed under the *tools*. As stipulated by the director, the second-tier supervisors and the students in the section, each has a Mission List which lays out their research topics by 'basic research' and 'clinical research', with progress on each topic indicated and updated before each meeting. (Progress may be delineated, for example, in the following ways: protocol 70%, data collection 50%, measurement 30%, draft 10%, under review with an indicated journal, and so on). The verbal communication of the director — that is, what he says to the second-tier supervisors and the students, on a daily basis but in particular at monthly research meetings — is also listed as an important mediational tool in Figure 9.1. The director's verbal remarks targeted at the medical students attached to his specialist section constituted the focus of the study presented below.

2.2. Data collection and data analysis

The data of a number of sources formed the basis of this study:

1. one particular item in a questionnaire responded to by the 17 students attached to the director's section

2. interviews with 14 of the students who were available for interview

3. my observations at the section's monthly research meetings on three dates in April and June 2012.

The short Chinese-medium questionnaire used in the first source was designed to obtain preliminary information on the students' research activities; one item in the questionnaire invited them to write down three of the director's remarks which impressed them, as well as their understanding of the director's intentions in making these remarks. The interviews with the students which made up the second source were conducted in Mandarin Chinese, aimed to better understand their research activities and their views of the director's verbal remarks; the interviewees were accessed with the help of a student representative, a second-year doctoral student referred to as 'monitor' in the director's section. With regards to the meetings that were used as the third source for this study, two consecutive meetings were held one day apart in June, with the second convened to carry on the agenda of presentations which had not been completed in the first meeting. Such research meetings typically lasted between 4 to 6 hours each time and my attendance at the meetings on the three dates in April and June 2012 was 3.5 hours, 5.5 hours and 2 hours respectively. In the first meeting that I attended, I took observational notes; I conducted audio-recording at the latter two meetings in addition to note-taking. The relevant parts in the interviews and research meetings were later transcribed for analysis.

For data analysis, following initial familiarisation with the data and summary of the relevant questionnaire data in a tabular form, these summaries, the interview and research meeting transcripts, and my observational notes at the meetings were then coded in order in NVivo (a qualitative data analysis software program[1]). To answer the first research question outlined in Section 2, I first put the director's remarks into an array of different subgroups, each represented by a representative remark (see the second column in Table 9.1); these subgroups (of codes) are then subsumed under four broader categories (see the first column in Table 9.1) to indicate the meanings conveyed (that is, 'Go beyond the minimum requirement to aim high', 'Dedicate to research and adopt a high standard', 'Work hard to move up the social ladder', and 'Achieve success to uphold family honour'). While mapping out such a 'typology' (Bryman & Burgess, 1994) of verbal communication *tools*, I also made notes on the underlying moral messages; these underlying messages were found to constitute *rules* in a range of five neighbouring source

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1   See http://www.qsrinternational.com/.

activity systems in which the novices were also participants. In other words, I recognised that there was a 'flow' (Engeström, 2009) of *rules* from some neighbouring activity systems which helped construct the *tools* in the central activity of research supervision.

For answering the second research question, the focus of analysis was on the supervisor's commentaries at research meetings during the individual students' presentations on their projects. NVivo-based and manual analyses were conducted simultaneously, combining categorising and connecting strategies (Maxwell & Miller, 2008) in order both to look for regularities in the supervisor's rhetorical actions and to examine how they formed sequences in context. As shown in Table 9.2, the supervisor's rhetorical actions were found to fall into three categories.

The following section will elaborate on the hierarchical classification systems (Patton, 1990) constructed during the process of data analysis, in order to answer the two research questions specified in Section 2 respectively. I refer to the director as 'the supervisor', in order to clarify his role in relation to his students.

3. Findings

3.1. Rules *in neighbouring activity systems underlying the supervisor's verbal communication* tools *in the research supervision activity*

Table 9.1 (with the Chinese *pinyin* of a few figurative expressions provided in italics) indicates that rules from five neighbouring activity systems — those of evaluation, publishing world, scientific research world, competitive society-at-large, and Chinese culture — were drawn upon by the students' 'big boss' supervisor, or the director of the department in this case, to construct the tools in the central activity of research supervision.

The connections between the supervisor's categories of verbal communication tools and the five source activity systems, as captured in Table 9.1, are reflected in the headings of the sections below. His words are indicated by the use of inverted commas.

3.1.1. Going beyond the minimum requirement to aim high to accommodate evaluation and the publishing world

The supervisor expected the students attached to his section to go beyond the minimum requirement of publication stipulated by their universities and to aim to do the best they could in their publication goal. There was thus a concern for both quantity (fulfilling the number required) and quality (achieving excellence, typically through publishing English papers in SCI international journals), which together accommodated rules in the evaluation system and the publishing world.

As each student had a collection of 'basic' and 'clinical' research topics (linked to their second-tier supervisor's projects in a 'Task Force' group) as indicated in their

Mission List, the idea was that they were expected to move ahead by working on multiple topics and multiple papers at the same time. To the supervisor, some papers would be relatively easy to write up, and these should be dealt with first as *duan ping kuan* (short, plain and fast) types. Furthermore, publications were of different levels — 'diamond', 'gold', 'silver' and 'bronze', in the words of the supervisor. Higher-grade publications or papers published in prestigious journals would be looked up in the publishing world while bringing extra credits in evaluation, and therefore they should be earnestly pursued. The supervisor would say to the students, 'Hurry up on these gold-standard papers!' or, 'You don't have a gold-standard paper in hand yet!'

Papers published in overseas, English-medium, indexed journals were of a higher grade in the supervisor's eyes than those published in Chinese-language journals. He referred to English as '*yangwen*', an archaic expression in Chinese for 'foreign tongue', rather than as *yingwen* or *yingyu*, the contemporary expressions for 'English', in order to figuratively highlight the power of the English language and the relative lack of power of Chinese-speaking authors in this situation. ('*Yangwen a yangwen*!' he would say, meaning, 'English, o English!'). He advised: 'Produce Chinese publications first to *baodi* (meet the minimum requirement) and then *siqiu* (fight to death for) *yangwen* papers!'

3.1.2. Dedication and a high standard are expected in the research world

One student said in an interview: 'When I first entered the department, the director kept telling us: being a doctor you can't just know how to do surgeries, you should also collect data for research,

The director's verbal communication tools		Rules called upon in the source activity systems	Source activity systems
Categories	Representative remarks		
Go beyond the minimum requirement to aim high	• '*Duan ping kuan* (short, plain and fast) papers' (can be produced first).	• The number of publications counts. • Speed counts in publishing.	• Evaluation • Publishing world
	• 'You don't have a gold-standard paper in hand yet!'	• Publications are of different levels. • Prestigious publications bring pride.	

Table 9.1: The supervisor drawing upon *rules* from source activity systems to create verbal communication *tools* in research supervision.

Theme	Quote	Interpretation	Context
Dedicate to research and adopt a high standard	• 'Produce Chinese publications first to *baodi* [meet the minimum requirement] and then *siqiu* [fight to death for] *yangwen* [English] papers!'	• Meet the publication requirement first. English publication is privileged and should be the more important goal.	• Scientific research world
	• 'This matter I will get done well without eating or drinking.'	• Research is a priority and dedication is required.	
	• 'Scientific thinking is important.'	• Scientific thinking is a basic requirement in doing research.	
	• 'Does it *jiegui* [connect] with the international?'	• An 'international' standard should be adopted in research and writing.	
Work hard to move up the social ladder	• 'five mountains'	• The realities are tough and one can only tackle them by working hard.	• Competitive society-at-large
	• 'the three secrets of success'	• Be different.	
	• 'Be prepared to *po fu cheng zhou* [break the caldrons and sink the boats or cut off all means of retreat].'	• Determination is required for success.	
	• 'Have you positioned yourself?'	• Know your direction and work hard from the beginning.	
Achieve success to uphold family honour	• 'You have three years to change fate.'	• Change your humble background by working hard.	• Chinese culture
	• 'Your family places high hopes on you.'	• Fulfilling parents' expectations is virtuous.	
	• 'You should earn some honour for your family.'	• Bringing honour to family is laudable.	

develop understanding of issues and write papers'. For research, the supervisor stressed dedication, rigour and an 'international' standard, all of which are supposedly *rules* that participants in the scientific research world are expected to abide by.

Many students were particularly impressed by one remark that the supervisor urged them to say to themselves: 'This matter I will get done well without eating or drinking'. This meant that students should approach research with determination and strong willpower, and be prepared to prioritise it even at the cost of physical suffering. In sharpening one's 'scientific thinking', the director emphasised, students should be 'quick-minded' and sensitive to valuable patient-cases during data collection; they should also 'attend to details', since 'details determine the result'; and they should 'double-check' results. Importantly, both research and writing should 'connect with' (*jiegui*) the 'international' standard. At research meetings, the director would ask from time to time: 'Does the protocol connect well with the international?' 'Does the title connect well with the international?' He was blunt in pointing out that the standard he expected of his students was not the same as that which might be more commonly found in other Chinese hospitals: 'Not many do research in our way'. By this, the supervisor seemed to urge the students to draw a line between themselves and lower standards. He took pride in the high standard that he expected of his section's research, pointing out that the section had a 'more demanding' requirement than that at a corresponding department of a university outside mainland China with whom they had a joint doctoral program.

3.1.3. Working hard to move up the social ladder is the way to go in a competitive society

The competitive society-at-large is run by many rules for survival and success. The supervisor evoked these rules in characterising the kinds of challenges faced by the students and in proposing ways to 'march forward with the tide of time'.

He talked of 'five mountains' faced by the students: getting into the doctoral program (given an examination-based and highly competitive selection process); graduation (given the 'publish or no degree' policy); finding a job (in an acutely competitive job market); buying a house (possession of a great sum of money being a precondition); and finding a spouse (for which both financial and job security were needed). As seen in the questionnaire and interviews, the students held very similar views on the best way to scale the 'five mountains': they aimed to prioritise study at present and work hard to excel, believing that the rest would be resolved naturally. Apparently, the supervisor's teaching on a daily basis had gone down well.

The supervisor also spoke of 'the three secrets of success': 'Knowledge shall change fate'; 'English shall change the employment'; and 'The one who is out of the ordinary shall win'. The last of the three aphorisms (Chinese *pinyin*: '*yu zhong bu tong zhe sheng*') became a phrase often cited by the students among themselves over time. Merely meeting

the minimum requirement of publication, which would also be achieved by others, 'guarantees a degree certificate but does not guarantee a job', the supervisor warned.

The supervisor capitalised on Chinese idioms and referred to the story of one particular student as exemplifying a case of *po fu cheng zhou* ('breaking the caldrons and sinking the boats, or cutting off all means of retreat)'. This student, having failed to be admitted into the doctoral program headed by the supervisor in a previous attempt, decided to give it a second try instead of looking for a job, despite the fact that he would be financially pressurised during the year of preparing for the next round of entry examinations. One should be prepared to *po fu cheng zhou* in pursuing dreams, the supervisor emphasised. How can one afford not to know the direction one must go in and work hard towards it from the very beginning? He questioned new students: 'Have you positioned yourself?' Alternatively, he simply chided: 'You have not positioned yourself yet!' or 'You have not entered your role yet!'

3.1.4. Achieving success to uphold family honour is a virtue in the Chinese culture

For many university students in China, who come from less well-off regions of the country, being able to go to a big city for university and find a job thereafter in a major city is a dream coming true. The achievement is also considered immensely glorious, by changing one's destiny and bringing honour to family. The supervisor tapped into these values in the Chinese culture in his exhortations to the novices.

He conveyed a message of urgency in saying to the students that they could turn their lives around by working hard: 'You have three years of a golden opportunity to change your fate'.[2] He would pick on students' names and point out that they should live up to their parents' expectations. One student's name contained a character composed of three 金.[3] The mentor remarked: 'Three gold — your family places high hopes on you: making a huge amount of money', implying that the student should work hard. Two students' names contained the character 龙.[4] The director said to them: 'You should earn some honour for your family'. One student's name (consisting of two characters) was homophonous with the Chinese equivalent of 'marshal general' (also two characters); so the director asserted, while commenting on the student's presentation at a research meeting, that he should act like a marshal general. The first name of another student

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2   In China, the normative candidature for a master's degree and for doctoral study lasts three years in each case.

3   The character made of three 金 (*jin* [gold]) is 鑫 (*xin*). When used in (male) names, the latter character means 'rich and prosperous'. Chinese parents give their children names composed of characters which have positive meanings and which sometimes imply their expectations for their children's future. Simplified Chinese characters used in mainland China are adopted in the present chapter.

4   The Chinese character 龙 (*long* [dragon]), when used in (male) names, implies nobility and success.
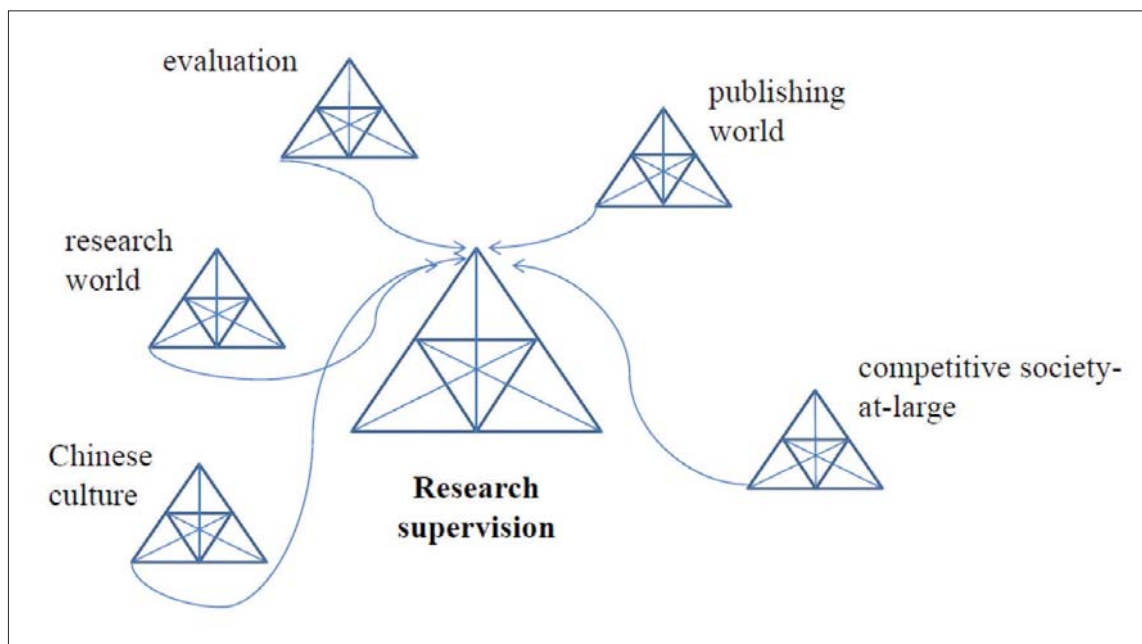
Figure 9.2: The 'flow' of rules from neighbouring activity systems to the node of *tools* in the activity of research supervision.

consisted of two characters that literally meant 'overtaking tigers' — needless to say, the supervisor picked on that to suggest that the student should live up to his name and fulfill his parents' wishes!

As a summary, Figure 9.2 depicts the flow of *rules* from the five neighbouring activity systems to the node of *tools* in the central activity of research supervision.

3.2. The supervisor's rhetorical actions at research meetings

The section-level monthly research meetings were the central venue in which the supervisor advised on projects and papers. Table 9.2 summarises the supervisor's rhetorical actions into three categories: 'Advising on the research process', 'Advising on paper strategies', and 'Criticising/warning/reminding', each with a range of subcategories.

In the following sections, the three categories are elaborated separately, with details that illustrate the subcategories shown in Table 9.2.

Categories	Subcategories
Advising on the research process	• data collection
	• data analysis
	• project planning
	• time management
	• use of resources

Advising on paper strategies	• suggesting the topic/content/scope of a paper
	• strategic planning on Chinese vs. English papers
	• target journal selection and paper submission
Criticising/warning/reminding	• warning on slow progress/not to meet the graduation requirement
	• urging attentive listening and note-taking
	• holding the second-tier supervisor responsible
	• reminding the monitor to take notes for the student presenter

Table 9.2: The supervisor's rhetorical actions at research meetings.

3.2.1. Advising on the research process

The supervisor gave plenty of comments and reminders concerning the research process. Advice was given on

1. data collection (for example, that the patient-cases at both the wards and the outpatient clinic [OPC] should be collected, and that patient films of the post-operation check should also be gathered)

2. data analysis (for example, the supervisor might say, 'Measure [the data] as you collect them', or he might point out that that a student's work had 'fatal flaws' in its measurement method)

3. project planning (for example, the supervisor might say, 'You should have back-up [clinical] projects when doing basic research', since basic research tends to be slow in producing results; or, 'Hurry up on research that will lead to gold-standard papers')

4. time management (for example, 'Measurement is a humanly controllable stage, so speed up on it to leave more time for drafting the paper'; or, 'Write it up by the end of the year'; or, 'Submit it soon')

5. use of resources, which could include:

    a. encouraging internal mutual support (for example, 'Has XXX [another student] used the method before? Go talk to XXX about it', and 'Can you co-author the paper?')

    b. suggesting utilisable external resources (for example, 'Go and communicate with the Department of Anesthesiology'; or, 'Discuss with our collaborators in [a region outside mainland China]')

    c. assuring financial support (for example, 'Adopt an international standard; don't worry about the money'; or, 'The expenses on phone cards can be claimed').

3.2.2. Advising on paper strategies

Given that 'published high-quality papers' makes up part of the outcome of the research supervision activity (see Figure 9.1), it is not surprising that the director also constantly made suggestions on paper strategies. Referring to the paper topics proposed by a student (usually in consultation with his second-tier supervisor) in his Mission List or on a PowerPoint slide, or in the middle of discussing certain topics, the supervisor might suggest a related topic for an additional paper, with suggestions on its scope and content. An indicative remark might be: 'It can be broken down to several papers, definitely not just one. You may include a Chinese paper'.

The 'Task Forces' (research groups) in the supervisor's specialist section aimed to publish both Chinese and English papers, with the latter considered more prestigious, as indicated earlier. To the supervisor, in general, for each project there should be a few 'decent Chinese papers'; and some work might be good for a Chinese version only, when 'the data are important but have no reference value for foreigners' and 'an English version would be incomprehensible to those Chinese readers who might be interested'. For Chinese papers (which are relatively short), students should normally 'just ensure there is no error or no self-contradiction'. By contrast, in putting together an English paper, which is worth 'fighting to death for' when there is a 'diamond-/gold-standard paper', one might consider 'combining the best results in these several Chinese papers', or 'adding additional validation procedures'.

Paper-related strategies also included deliberating over the selection of target journals and submission strategies. That is, when not too sure of a target journal, a student might try and submit to a journal to 'pique its interest', the supervisor advised; and when the work crossed over several specialist areas, it might be a good idea to 'try an on-the-border, not highly-specialised journal'. There was also a timing issue in paper submission: 'For those who need to graduate next year, submit in July or August at the latest!'

3.2.3. Criticising/warning/reminding

With reference to the graduation time and the need to meet the publication requirement, the supervisor might say to a student who was not making satisfactory progress: 'You should graduate next year; how can you graduate?' With the warning he might then outline a course of action for the student. He might also criticise a student for falling behind schedule, for not concentrating on research enough, or for failing to present an interim report at an earlier point so that a 'fatal flaw' in research design was not detected earlier. In addition, a second-tier supervisor might be criticised for failing to keep an eye on a student's progress.

As he gave concrete suggestions to a student on either the research itself or on timeline, he expected the student, and sometimes the relevant second-tier supervisor

as well, to take notes. He might give a student a heads-up: 'Your boss (the second-tier supervisor) is taking notes; you are not!' The monitor (a second-year doctoral student) was also expected to take notes, for a quick sharing with the student concerned afterwards. Thus the supervisor might ask the monitor at junctures of his commentaries: 'Have you noted this down for him?'

3.2.4. *The supervisor's goal-oriented rhetorical actions occurring in sequence*

The supervisor's three types of rhetorical actions at research meetings — that is, 'Advising on the research process', 'Advising on paper strategies' and 'Criticising/ warning/reminding' — occurred in sequence, as will be illustrated in context briefly in this section.

In the following advisory episode, the supervisor was pointing out that the student should factor in the unpredictability of laboratory research and proactively utilise existing internal and external resources to push a project ahead. In terms of the rhetorical actions, the supervisor both advised on the research process and sent warnings. In this extract, the student presenter has just talked about a slide on the in-vitro culturing of osteoclast [bone-resorbing cells].

> *Director*: You should prepare for the worst. What if the in-vitro culturing of osteoclast [fails] — what's the weight of this step in the whole study? According to what you said just now, this step is optional.
>
> *Student*: This hasn't been done [here] before.
>
> *Director*: But you want to graduate. In extreme circumstances, you will fail [in culturing the cells], as it's hard to do. Anyone else who has done this before? Any place in China?
>
> *Student*: [giving the name of a hospital in Beijing]
>
> *Director*: Why didn't you go and visit them? Contact them. If there's any difficulty, we can help. Why didn't you think of that? Visit them, save your time. Did you communicate with WWW [a doctor in the section who was on a secondment to a hospital in Europe at the time and was not the student's second-tier supervisor]? He is an expert in cultivating tumour cells. You should graduate in 2014 — how can you graduate? (Research meeting, 3 June 2012)

To give further illustration, Table 9.3 presents another extract, with the supervisor's goal-oriented rhetorical actions, in terms of the subcategories shown in Table 9.2, indicated on the right-hand side.[5]

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5   The director addressed both the students and second-tier supervisors by their full names, which also indicated his top position in his section's status hierarchy.

(The student presenter, XXX, showed a Table of Results on a PowerPoint Slide)		Supervisor's rhetorical actions
Supervisor:	Which is nearer the normal? Which is better? Is it the larger the better, or otherwise?	• data analysis
XXX:	Maybe hard to say.	
Supervisor:	Hard to say? Can you check with the Cardiograph Department? … — there's a normal range but is it the bigger the better? Or is it OK if within a certain range as with red cells? Which kind is it? Who is revising the paper?	• use of resources • data analysis • holding the second-tier supervisor responsible
YYY (The student's second-tier supervisor):	It's not yet submitted to me.	
Supervisor (to XXX):	You need to re-think. You should have done an interim report, before you started drafting. Otherwise you waste time in writing. Why haven't you presented a report? YYY, have you asked about it?	• project planning • holding the second-tier supervisor responsible
YYY:	…	
Supervisor (to XXX):	… What's your conclusion? Your conclusion just now is not logical. [Reading the slide] You shouldn't say [this]; it should be [this] … Now that you've written this, I think you can also include analysis of the data of adult patients … Take another group to compare whether there is difference. If there is no difference, then in your conclusion, you may say [that] during adolescence the heart function is not influenced by [this] … If there is a difference, when you discuss [it], you can *say maybe* there is an effect for patients above 40 or 45 years of age. Who is the second-tier boss? Note it down; don't appear to be in a daze!	• data analysis • data analysis • data analysis • suggesting content of paper • holding the second-tier supervisor responsible • urging attentive listening and note-taking
YYY:	I am writing. (With a smile)	

Supervisor:	The mind is not quick at all! ZZZ [the monitor], note it down for him — add: 'adolescent patients, possible influence on heart function' [etc.] … 'Adult patients versus adolescent patients'. [To the student presenter] Your supervisor is taking notes; you are not — XXX, you have not entered your role yet!	• reminding the monitor to take notes for the student presenter • urging attentive listening and note-taking • warning on slow progress

Table 9.3: The supervisor's rhetorical actions during a student presentation (Research meeting, 3 June 2012).

The sequence of actions as laid out in Table 9.3 was given coherence by the macro-level object (Engeström, 2000) of 'quality research and efficient publication' (as shown in Figure 9.1), which provided the motive for all the actions. Examining the actions in sequence lends insights into how the different types of rhetorical actions as shown in Table 9.2 might interweave to achieve the effect of advising desired by the supervisor. Clearly, the actions also demonstrated the supervisor's absolute authority in the supervision activity (that is, illustrating the *division of labour* in Figure 9.1). However, it should be noted that although he seemed to chide the students and even the second-tier supervisors freely in issuing his directives, he did not do so with a stern look or a harsh tone. A second-tier supervisor's responding to the director's chide with a smile, as shown in Table 9.3 (towards the end of the excerpt), would indicate that the atmosphere was down-to-earth and respectful but not unnervingly tense.

4. Discussion, implications and conclusion

Drawing upon the theoretical perspective provided by cultural-historical activity theory [CHAT] (for example, Engeström, 1987; Engeström et al., 1999), the study in this chapter investigated a 'big boss' supervisor's verbal communication in research supervision at the Orthopedics Department of a major Chinese hospital. The study was guided by a two-fold aim: to find out with what neighbouring activity systems the research supervision activity interacted and how, and to describe the supervisor's rhetorical actions when providing commentaries during his students' presentations at research meetings. It was found that the supervisor evoked rules in five surrounding activity systems to feed into the tools in his supervision activity: those of the evaluation, publishing world, scientific research world, competitive society-at-large, and Chinese culture. It was also revealed that the rhetorical actions implemented by the supervisor at research meetings fell into three groups — advising on the research process, advising on paper strategies, and criticising/warning/reminding; the actions interwove and occurred in sequence in the supervisor's commentaries during the students' presentations,

consistently motivated by the object of the supervision activity — that is, quality research and efficient publication. The study both echoes and adds something new to the literature, with theoretical and pedagogical implications and implications for future research, as elaborated below.

4.1. Towards a holistic perspective upon research supervision

The study reported in this chapter, in describing the involvement of five surrounding activity systems with the central activity, highlights the value of taking a holistic perspective on research supervision. Previous research on academic supervision has discussed the influence of societal and policy-level practicalities (Li, 2016; McCallin & Nayar, 2011); the present study extends this proposition to a wider perspective. That is, other than the impact of the competitive society-at-large and of the evaluation system at the policy level, the study also demonstrates a role for the research world, publishing world, and Chinese culture in the process of research supervision in the case under examination.

The employment of CHAT or activity theory in the study has allowed me to conceptualise the resources drawn upon by the featured supervisor as resulting from interactions between a central activity and a series of neighbouring source activity systems. The literature has shown that the *outcome* of one activity system can 'flow' into a neighbouring activity system to become either a *rule*, indicating a power-imbalance relationship between the two activity systems (Engeström, 2009), or a *tool*, indicating a 'nesting' relationship between activity systems (Li, 2013; Barab et al., 2002; Engeström, 2000). The present chapter has reported another type of 'flow': that of *rules* from neighbouring activity systems into the *tools* of the central activity. Future research can continue to explore the interacting relationships between activity systems in terms of varied, dynamic interconnections between the nodes of the systems.

In drawing upon the hierarchical view of activity, which posits that object-directed activity comprises sequences of goal-oriented actions (Engeström, 2000; Leont'ev, 1978), the study also examined the supervisor's rhetorical actions using both categorising and connecting strategies (Maxwell & Miller, 2008). Previous applications of the hierarchical view of activity tended to focus on sequences of physical actions (for example, Li, 2013, 2014b; Barab et al., 2002; Engeström, 2000). The potential productiveness of employing the hierarchical view of activity to examine rhetorical actions and their sequences has only been sporadically discussed in the literature, by reference to academic written texts (Bazerman, 1997; Peters, 2011). The present chapter has exemplified adopting the hierarchical view of activity in studying spoken discourse. It can be suggested that, at a broader level, research supervision such as that in a hospital setting, which necessarily involves both spoken and written communication, is made up of many such goal-oriented sequences of physical and rhetorical actions, which are implemented across space and time.

4.2. A 'power over' supervisory relationship may be productive in a particular context

The literature on research education (Casanave & Li, 2008), situated learning in scientific writing (Blakeslee, 1997), and mentoring in medical settings (Souba, 1999) has revealed that effective mentoring is characteristically based on a kind of 'power with', rather than 'power over', relationship (Heinrich, 1995; Luebs, Fredrickson, Hyon & Samraj, 1998). Instead of having a mentor dominating as an authoritative, bossy figure, it has been suggested that in successful mentorship we tend to find 'guidance, interaction, and a refreshing balance of negotiating strategies and decision-making' (Casanave & Li, 2008, p. 8). The supervisor described in the present study, by contrast, clearly tipped over to a more traditional role, by maintaining a strongly authoritative stance, echoing the previous characterisation of Chinese research supervision as being 'paternal' and 'highly directed' (McClure, 2005, p. 10). This dominance of expert authority on the part of the supervisor contrasts with a view of bi-directionality of learning between expert and novice (for example, Jacoby & Gonzales, 1991). Yet despite evidence of expert dominance and novice deferral not leading to productive learning (Blakeslee, 1997), including in the Chinese context (Li, 2012), it may be reasonable to suggest that in a particular local context, an apparently 'power over' supervisory relationship may actually be both natural and potentially productive.

In postgraduate students' research supervision in a Chinese hospital setting, the existence of those neighbouring activity systems as described in the present chapter is probably more likely to facilitate a 'power over' rather than a 'power with' kind of mentoring relationship. In other words, it may be relatively straightforward for the supervisor (if he or she is willing to do so) to draw upon the power inherent in the neighbouring activity systems and to wield it in supervision. The inclination towards a 'power over' approach can be reinforced, first, by the often strictly hierarchical relationships institutionalised in the hospital setting (a scenario which may likewise be seen in hospitals elsewhere in the world) and, second, by the ethos of 'respecting the teacher' underlying Chinese culture. In addition, although the study reported in this chapter did not gather longitudinal evidence to show how the supervisor's teaching might have a long-term positive effect on his disciples, the unanimously positive and admiring outlook that the students displayed upon the supervisor's teaching during the interviews, together with their section's publication achievements over the years to which the students had crucially contributed, did suggest that the supervisor's 'power over' approach seemed to have had a positive effect on the students' learning in the local setting. This was apparently because, in contrast to the case in previous research (Li, 2012; Blakeslee, 1997), the students were made to be fully engaged in a network of activity systems revolving around research and publication (see, for example, Li, 2014b), a perspective that should point to a future line of research.

Still it may be difficult to recommend the same supervisory strategies to other research supervisors, for, after all, supervision takes place within particular contexts. Whatever supervisors and students themselves bring to their local context, including their personalities and life histories, and their relationships formed over time, will become part of the context and will help to shape productive communication strategies for research supervision. Nevertheless, the featured supervisor's approach of drawing upon resources from a range of activity systems in which the students were also participants, and weaving together a variety of rhetorical actions in advising students during research meetings, might provide perspectives for reference in alternative contexts. For this reason, the study reported in this chapter will have implications for understanding research supervision in different cultures and, in particular, in non-anglophone academic environments where English publication has become a high priority. It can also inform programs that train supervisors to mentor their students for successful research publication.

Future research that is conducted in varied academic, professional and national contexts will continue to build our understanding of effective research supervision. It is hoped that the present chapter has reported findings that will serve as a baseline for comparison for future research. Having tied the findings to the use of cultural-historical activity theory [CHAT] in my study, I hope that the study has also demonstrated the value of this theory in throwing light on the complex, collective activity of research supervision.

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