

To Go BEYOND URBANISATION
METHODOLOGICAL APPROACHES TOWARDS CHINESE
URBANISATION RESEARCH IN A NEW CONTEXT

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For my daughter

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Abstract

This research seeks to identify a fundamental problem with the collective research behaviour associated with Chinese urbanisation.

A philosophical examination on the concept of the paradigm constructs the theoretical base for the exploration into Chinese urbanisation research. The original idea of Thomas Kuhn's notion of the paradigm is reviewed. This highlights vagueness, confusion and conflict. The "paradigm" is thereafter re-conceptualised as "recurrent truth in human thinking". However a "factual paradigm", though it is conceived as true, is not necessarily true. However, identification of a problematic paradigm can be extremely difficult. A general rationale of identifying problematic paradigms is thus suggested. It is identified a process of tracing back, step by step, to the components underlying the present idea until the "basic knowledge" (a term in this thesis describing knowledge which has to be derived from human intuition or observation rather than logical development, like axioms, facts or inevitable value-judgement). The investigation of paradigms should be a stratified process of knowledge dissection, leading to the revealing of paradigm hierarchy originally formed in the process of knowledge development.

This conceptualisation of the paradigm shows that, as in any thinking, there could be problematic paradigms in Chinese urbanisation research; and if this is the case, the problematic paradigms could have become mutually supportive and therefore escaped challenge. This thesis therefore adopts a stratified dissection of the knowledge community associated with Chinese urbanisation research to discuss whether there is a problem with the basic knowledge or the fundamental paradigm. Two hundred and eighteen papers on, or directly relevant to Chinese urbanisation, in two leading journals, are identified as collectively representing the community of Chinese urbanisation research. The investigation highlights three levels of dominant, problematic paradigms through sample papers. The first level involves an accelerating tendency perspective of Chinese urbanisation. There are meanwhile several dominant research topics such as the analysis and prediction on urban population growth trajectory, optimal urban size, urban hierarchy and urban system. These paradigms are actually developed based on some theoretical tenets on urbanisation. For example urbanisation level growth is believed as a linear concomitant of development and industrialisation. It is also believed that there are some particular laws governing spatial patterns associated with urbanisation. This is the second level. Yet behind these perspectives, there are the epistemological paradigms at work, assuming that the best way of exploring knowledge on urbanisation is predominantly empirical induction.

With the problem identified, the thesis finally contemplates a possible solution. By reforming the epistemological foundation, problem-orientation and continuous deduction process, could become the basic methodology. Then themes for new perspectives on Chinese urbanisation and Chinese urbanisation research can be suggested.

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Good sense is, of all things among men, the most equally distributed ...the power of judging aright and of distinguishing truth from error, which is properly what is called good sense or reason, is by nature equal in all men.

... because we have all to pass through a state of infancy to manhood, and have been of necessity, for a length of time, governed by our desires and preceptors (whose dictates were frequently conflicting, while neither perhaps always counselled us for the best), I farther concluded that it is almost impossible that our judgements can be so correct or solid as they would have been, had our reason been mature from the moment of our birth, and had we always been guided by it alone.

———Descartes

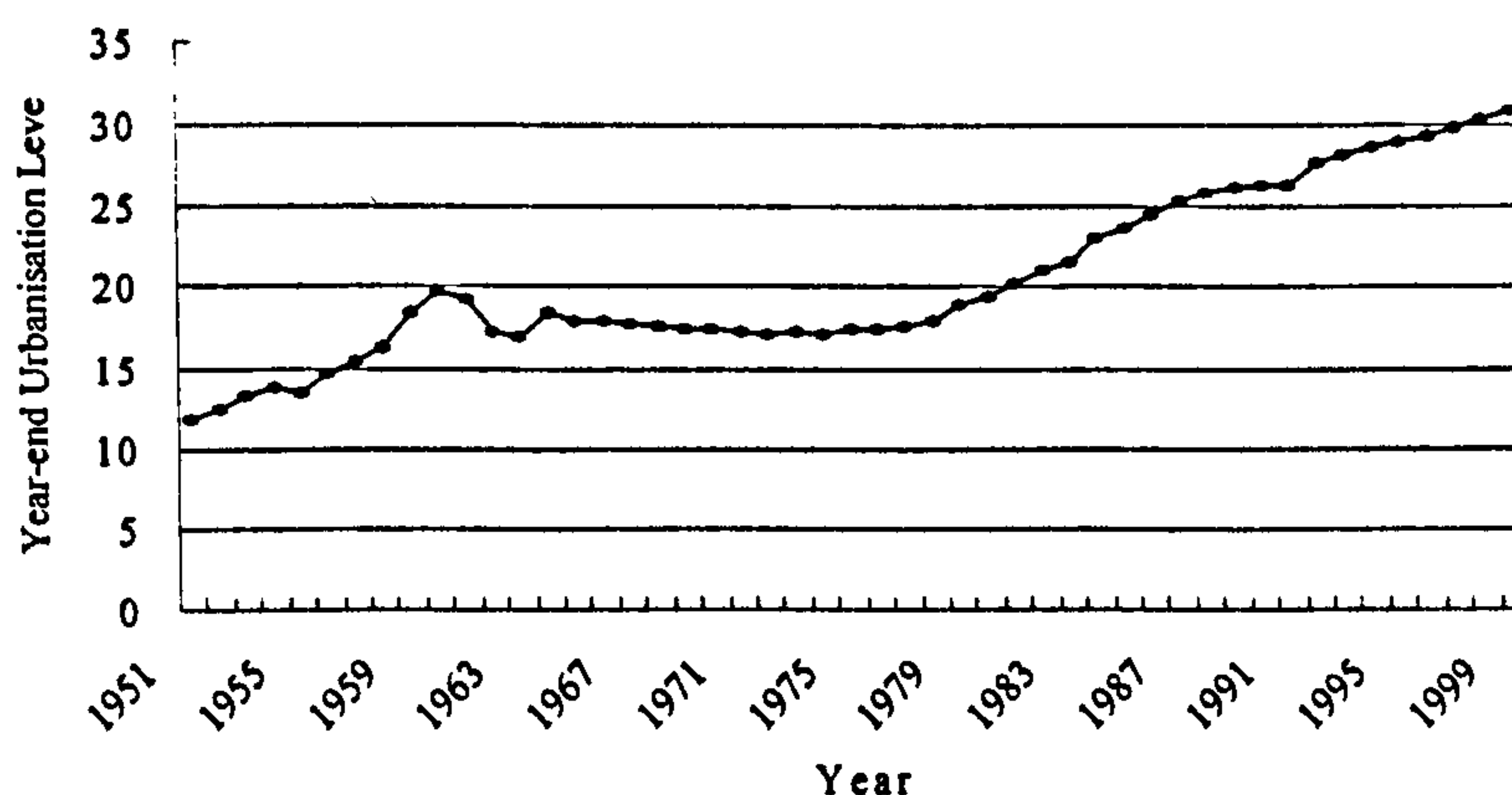
PART I THE RESEARCH QUESTION

Chapter 1: Introduction

1.1 Background to Chinese urbanisation

Urbanisation, given as a process of becoming urban, seems to have seen its most dramatic performance in the second half of the twentieth century in China. From an initial base of 11.8% in 1951, the level of urbanisation in China has almost doubled by 1999 (30.9%), with a net growth 323 million of new urban inhabitants (*China Statistical Yearbook* 1999). This process fluctuated seriously, leading to the urbanisation level in some years growing rapidly, some years almost stabilised whilst others quickly dropping (see Figure 1).

Figure 1 Urbanisation Level in China: 1951-1999



Following the demographic growth, urban settlements also expanded fast. By the end

of 1998, there were 668 cities (*Urban Statistical Yearbook of China, 1998*), compared with only 132 in 1949 (CSICSC, 1990). Among cities, grouped by non-agricultural population in “city districts”¹, there were 34 extra-large cities (non-agricultural population in city districts over 1 million) and 47 large cities (non-agricultural population in city districts between 0.5 to 1 million), accounted to only 5 and 7 in 1949.

It seems that from such a picture of impressive growth, urbanisation in China merits close attention. In addition, for many, the growth of urbanisation is largely the synonym of development and becoming rich. In China, direct observation and statistics all seem to prove this idea. In 1998, Chinese cities (all calculations based on city districts) accommodated 19.3% population of the national total and covered only 3.6% of the land area, but their economic output contributed 50% of the national total, with the large cities dominant in almost every respect (CSY, 1999). There seems also a general conviction that it is the most urbanised areas or the areas with the large cities that has been enjoying the best economic performance such as the Yangtse Delta and the Zhujiang Delta, with the former culminating in Shanghai, the biggest economic centre in China, and the latter concentrating around Hong Kong.

So, the study of urbanisation in China is even more fascinating since if urbanisation is a positive indicator of development, then the continuously rapid growth of urbanisation level in China will represent the success of the world’s most populous developing country. All of this illuminates the significance of Chinese urbanisation research.

¹ Population included in the calculation of urbanisation level adopt the same area criterion but do not exclude the agricultural population.

1.2 Why are methodological approaches appropriate?

But then, why are methodological approaches appropriate? This thesis is an examination of the research methodologies used to explore Chinese urbanisation. This is a somewhat epistemological/metaphysical topic rather than a discussion about concrete issues in the process. Whilst epistemological discussions may seem far from reality, they are, in fact, always aroused and shaped by practical considerations. In this case, preliminary explorations concerned with Chinese urbanisation highlighted the emergence of some potential methodological problems in the research, and this triggered the focus for this research topic.

The early research topic sought to suggest the strategy for contemporary Chinese urbanisation. A strategy seems naturally linked with two elements, *a precise grasp of the key issues (problems)* and *a corresponding action plan*. Therefore, the study needs as the first step the identification of key issues in Chinese urbanisation process. Then we have to grasp the mechanism underlying these issues. Afterwards it may be possible to move to action plan.

Whilst there are many ways to summarise the key issues facing China's urbanisation, it is possible to identify four key challenges for the strategy-maker:

- i) *How can the prospect of employment growth be evaluated?* If urban population growth is seen as a part of an urbanisation strategy, and if we agree employment growth as a substantial reason for urban population growth, then it is vital to understand the potential of employment growth. There is almost an infinite supply of labour in China. According to the 1990 Census, the working age population (male 16-59, female 16-54) was 679 million, which is comparable with the gross population of the whole of Europe, 729 million in mid-1997 (CSY, 1999).

However, where are all the jobs to come from? The relation between the growth of

employment and economy in this era has become far more complicated than before.

- ii) *How can the societal inequality associated with the urbanisation process be accommodated?* The contemporary world economy, whose key feature is now described as globalisation, involves each country in an inextricable mesh, which for the writer, may be described as a “pernicious-competitive imperative”. One of the features of this process is to put “elite” places in a more advantageous position. So “objective” unregulated urbanisation is likely to widen inequality between and within regions.
- iii) *How will the modernisation of transportation and communications systems affect the spatial pattern of urbanisation?* Modern transportation and communications systems have been spreading rapidly in China. Urbanisation is a spatial process, and space is relative in many spheres. So if the modernisation of transportation and communications systems has been changing the relative position of spaces and places to each other, this might be reflected in patterns of urbanisation.
- iv) *How can the ecological pressure of urbanisation be alleviated?* Urbanisation is bringing about severe pollution problems. Urbanisation is a process which consumes large quantities of resources. One example is cultivated land (farmland), which in China is relatively scarce but vital for feeding more than 20 percent of world population. In China, 69.3 percent of the area is mountainous, plateaus and hills which are largely uncultivable. The remaining plains and basin areas are where the cultivable land is found, and then only about a third of this land can be farmed. Thus cultivated land only occupies 9.9 percent of China’s area (CSY, 1999). A comparison based on the data from 1992 shows that the arable land and land under permanent crops in China was only 0.08 ha per capita, less than 30 percent of the world average (HABITAT, 1996).

Further preliminary investigation concerned with these challenges encouraged an examination of the overall research methodology prior to the investigation of the concrete issues. There are two reasons for this. First, the existing wisdom in Chinese urbanisation research has not effectively dealt with these challenges. There seems to be a divergence between the challenges facing Chinese urbanisation and popular academic approaches or arguments used by researchers. Furthermore, in terms of these challenges, there are many reasons to question the validity of many existing research achievements. For example, one popular viewpoint is that China has been moving into an accelerating stage of urbanisation, that is, the growth of urban population is accelerating (e.g. Deng, 2000; Gu *et al*, 1999a; Hu, 1998; Liu, 1998; Lu, B., 1998; Ma, W., 1997; Wang *et al*, 1997; Yang, X., 2000; Zhong, X., 2000; this will also be covered in detail in Chapter 4). However considering the employment challenges, the “accelerating urbanisation” thesis should not be taken for granted. Another example is the fashionable idea about regional planning, which conceives that there should be an ideal pattern of assemblage of different sizes of urban settlements in a region in terms of urban hierarchy, function specialisation and infrastructure network. So planners just try to “direct” regional development towards such an ideal model through functional coordination and specialisation, and urban size control etc (e.g. Chen *et al*, 1990; Chen *et al*, 1994; Dai, 1994; Dong *et al*, 1992; Hou, 1992; Li, 1997; Li *et al*, 1997; Liu, Y., 1998; Wang *et al*, 1992; Yu, G., 1992; Yu, Y., 2000). But uneven development due to the imperative of maximising external competition make it questionable whether spatial patterns of urbanisation can be efficiently regulated. These examples pose the question; how could such collective divergence happen? An investigation into research behaviour/methodology is necessary.

Secondly, the effort to find a satisfactory understanding of challenges facing Chinese urbanisation needs to involve in-depth, systematic studies of the current socio-economic context. This is a new context in terms of the time within which it occurs, and the nature of changes it brings, particularly the connection of such changes with urbanisation. Here it seems that the claim included in the second report of *The Club of Rome* is appropriate: “we

are in the early stage of the formation of a new type of world society which will be as different from today's as was that ushered in by the Industrial Revolution from the society of the long agrarian period that preceded it" (King & Schneider, 1996, xiii). In addition, accepting such a change may require a re-examination of the many traditional and fundamental ideas concerning urbanisation, which are actually the basis of existing urbanisation research. For example, given that employment growth is a factor influencing urbanisation, then the dramatic change of the employment growth pattern is likely to have significant implication for the nature of urbanisation. There would then perhaps be a need of fundamental re-conceptualisation "urbanisation research". For both perspectives, there is a need to explore the necessary methodology or methodological implications as the first step.

The research topic has thus been defined as "methodological approaches to research concerning Chinese urbanisation". With hindsight, the significance of such a topic is highlighted by the apparent lack of literature which directly focuses on the topic of the methodology for Chinese urbanisation research. In fact, perhaps because that the process of Chinese urbanisation being so attractive, most researchers study the process itself and few have managed to think through the research activity itself. This study searched the relevant research in one of the major academic journals of Chinese urbanisation research, *Jingji dili* (Economic Geography). In all of the issues of the journal from 1981 until 2000², there are about twenty papers which discuss or relate to the methodology of human or economic geography but not particularly the methodology of urbanisation research. Nearly half of them introduce the development, progress or characteristics of non-Chinese, mainly Western human geography research. There are different methodological implications from these papers. Some relate to the debate between induction and deduction, or exceptionalism and generalisation (Xie, 1981; Li *et al*, 1981); some summarise the methodological evolution from positivism to humanism to structuralism (Chen 1988; Chen 1992), or from the quantitative and

² There are a few issues missing or with missing pages.

model-building approach to the behavioural approach to the institutional approach (the radical approach) to the environmental approach (Harris, 1981); others concentrate on one specific methodology such as the behavioural approach (Li, Y., 1983). Some theories with methodological relevance are raised as well such as the theory of locality (Yang, W., 1988; Yang, W., 1989; Zhou, 1988; Zhang, W., 1984). All these give a rich and colourful impression concerning “methodology”, and certainly, to some degree, they can enlighten the thinking about methodology of Chinese urbanisation research. However they seem too general to inform researchers how the study of urbanisation should be carried out. In particular, such arguments are not raised specifically in reference to the practical research activity on Chinese urbanisation. So there is a lack of a general picture about the characteristics of the methodology of Chinese urbanisation research, let alone any critical and relevant evaluation as to whether and how there should be some improvement with Chinese urbanisation research in the methodological sense. These are exactly the questions that this study seeks to address.

1.3 Research aim and objectives

The next section identifies the technical elements of the research. These elements are the overall research aim, the detailed objectives needed to address the aim and the methodology. The research methods will be introduced in the next section. There is not really a standard technical model available for all research projects to follow. After all, human thinking is far more complicated than structured knowledge³. This appears more explicit in social sciences because research in social science seems unable to be really structured in a single and unique way. The practical research process is always

³ The writer read an interesting comment with similar opinion by Franklin (2000, webpage) in his remark about Kuhn, though which somewhat goes to the extreme. He calls structuralism (presumably) “theomachy”, “a mode of explanation which worked so brilliantly for Marx and Freud, and, long before, for Humer”. “What was previously thought to be a continuous and uninteresting succession of random events is discovered to be a conflict of a finite number of hidden gods (classes, complexes, paradigms, as the case may be), who manipulate the flux of appearances to their own advantage, but whose machinations may be uncovered by the elect to whom the key has been revealed”.

subject to continuing active and in-depth thinking. In this sense, the writing of a research framework, both the selection and the organisation of its contents, is rather to offer a basic clue to the reader, as well as the author, to understand the research from the very beginning. This is the philosophy that these two sections (1.3 and 1.4) cling to.

1.3.1 Aim

The overall aim of this thesis is *to reveal and interpret the fundamental methodological problem within contemporary Chinese urbanisation research and suggest some changes*. This methodological problem, our future investigation will discover, is a set of interconnected commitments in research activity, which include firstly some basic cognition about Chinese urbanisation and the research topics. Secondly, behind this cognition is the commitment to some general “laws” of urbanisation. Finally and most fundamentally there is the commitment to the epistemological nature of urbanisation knowledge, which determines basic methods to the study of Chinese urbanisation.

1.3.2 Research philosophy

This research will be a theoretical-hypothetical investigation. Thomas Kuhn’s (1962) paradigm thesis is developed in this study. This reconceptualised theory of paradigm is capable of explaining some general essence of the methodological problems in Chinese urbanisation research. So based on the reconceptualised theory of paradigm, an hypothesis about the main research object, Chinese urbanisation research, can be developed. Testing this hypothesis is then focus concerning the investigation into Chinese urbanisation research.

After the original ideas of Thomas Kuhn and debates surrounding his ideas are reviewed and analysed, there will be a new conceptualisation of the paradigm. As

mentioned above, it is in the context of the theory that the research hypothesis is established. So it seems necessary to describe the conclusions drawn about the new theory of paradigm in advance, since to understand later the research hypothesis and methods to test the hypothesis may need reference to the theory:

- i) *Despite perhaps pure inspiration, the concept of the paradigm explains the whole mechanism that human wisdom develops. The paradigm is recurrent truthful knowledge in thinking. The "truthful" means not only the logically verifiable, but also the kind of truthfulness as in axioms, facts, or any unfalsifiable value-judgements (these three types of knowledge are called as "basic knowledge" in this thesis). A human keeps truths in his mind, which tells what he knows; it is by the composition of existing truths that one of the two sorts of truths, the truth of the complex knowledge (in contrast to the truth of the basic knowledge), is produced. This is the essence of the paradigm thesis. So people have to employ paradigms.*
- ii) *Any recurrent knowledge in thinking is actually conceived as true. So in practical sense, despite perhaps the pure inspiration, elements in human mind are all paradigms. This highlights the vital issue of the paradigm mechanism. There could be paradigms that are not truthful.*
- iii) *Due to the variety and complexity of knowledge, the existence of a paradigm could be unconscious and the process to examine the truthfulness of a paradigm could be extremely sophisticated. Therefore untruthful knowledge could keep on working as paradigm.*
- iv) *Despite the difficulty, such examination is still theoretically possible and the rationale is clear. On the one hand it is to identify the existence of a particular paradigm. On the other it is to evaluate the paradigm. A major means fulfilling these two tasks is the process of knowledge dissection. That is, through tracing knowledge back to its logical premises step by step, theoretically human can eventually have*

recourse to all the paradigms beyond the knowledge, until the ideas at the basic knowledge level, the ultimate source of any knowledge. Obviously, such a process is capable of revealing not only all paradigms, but also the most essential criteria for paradigm evaluation. When knowledge has developed through the accumulation of paradigms, the process is in fact stratified and the final structure of the knowledge is actually a paradigm institution, in which the existence and the rightness of individual paradigms are shielded by the paradigm institution. This is perhaps the main reason contributing to the difficulty of paradigm identification and evaluation. In practice, this also leads to that the result of knowledge dissection is often the discovery of paradigm institutions and paradigm hierarchies.

v) *“Recurrent” is the identity element of a paradigm but “truthful”, which may be “conceived truthfulness”, is the essence. Given that a paradigm is true, it must and should have been shared by a group of persons as long as they encounter the corresponding context (the condition when the paradigm is relevant). So that a paradigm is shared by a group of people is not an essential feature of the paradigm. But the event that a paradigm is shared by a visible or big group is sociologically significant in sense of indicating that an idea is popularly accepted as paradigm and the context of the paradigm is particularly concerned with.*

In this context, our hypothesis about Chinese urbanisation research is that *some problematic paradigms dominate Chinese urbanisation research*. That is to suggest, some old problematic ideas are popularly being (perhaps unconsciously) taken as wisdom and work as actual premises in scholars’ thinking about Chinese urbanisation. From the theory of the paradigm, since knowledge (intellectual progress) accumulates through the mechanism of the paradigm, the unsatisfactory progress of Chinese urbanisation research could be due to the existence of problematic paradigms in the field. The theory of the paradigm also implies that the existence and operation of individual paradigms is often essentially backed up by some paradigm institution. So *the essence of the existence of problematic paradigms in Chinese urbanisation*

research could be the existence of problematic paradigm institution. This also relates to the general methodology for testing our hypothesis. That is, if the hypothesis is true, through stratified dissection of the knowledge community of Chinese urbanisation research, we should be able to identify some paradigms and demonstrate that they are problematic, and the direct outcome of such knowledge dissection could be some paradigm hierarchy.

If the hypothesis can be proved, the identification of the problematic paradigms and the reasons underlying their weakness have practical implications for Chinese urbanisation research. That is, other than the theory of the paradigm, the understanding of the problematic paradigms in Chinese urbanisation research will help to suggest more robust alternatives or the way to reform. So the present thesis is not pure theory-articulation research. It is aimed not at just verifying or falsifying or developing a theory. The theory of the paradigm is a general theory of scientific methodology. The development of the theory is completed through metaphysical reasoning (in Chapter 2 and 3). Departing from the theory, which provides some basic but vital notions and directions for exploration into Chinese urbanisation research, the remainder of the study will identify what are the problematic paradigms in Chinese urbanisation research, address how these problematic paradigms are involved in a difficult-to-be-disentangled paradigm institution, and how a real change can happen. This also indicates a probably unusual nature of this research in sense of the articulation of its theoretical and empirical parts, which is also reflected in the research structure and outcome. There seems much theoretical-hypothetical research, in which empirical part contributes to justification and application of theoretical argument, and achievement of a whole study has essentially been defined when the theoretical discussion is finished. But in this study, on the one hand, the empirical investigation into Chinese urbanisation research does not aim at a justification of the earlier theoretical argumentation. The initialisation, construction and justification of the paradigm theory will be completed within the theoretical part (Chapter 2 and 3). On the other hand, the examination of Chinese urbanisation research is an application of the paradigm theory.

But the theory only provides a guideline of starting point. The fulfilment of the main aim of the empirical part, the identification of the problematic paradigms in Chinese urbanisation research, needs much efforts beyond the paradigm theory.

To provide a more complete initial picture, the concrete outcome of future hypothesis testing, the to-be-discovered problematic paradigms of contemporary Chinese urbanisation research can be described as follows:

There is a coherent set of problematic and dominant paradigms. These paradigms are inter-supported. Most “superficially”, there is consensus on the basic tendency of Chinese urbanisation and the significant topics for research. For example it is commonly accepted that China is or has been entering the stage of accelerating urbanisation and the issues around this tendency are significant (Chapter 4). But a more basic reason behind these superficial paradigms is the commitment to the general theoretical ideas on urbanisation. For instance urbanisation is held as the inevitable process following development and this process abides by certain spatial and temporal laws (Chapter 5). But most fundamentally, there are some paradigms with direct methodological relevance, which determine that Chinese urbanisation research is predominantly of non-deductive logic. It is such basic methodological commitment that determines research behaviour, and eventually leads to the theories that are essentially phenomenal and non-causal. Changes with the causes of urbanisation cannot get sufficient attention, or even noticed, and cannot get validly processed and theorised. This also decides that the inadequacy in conventional cognition can not be successfully challenged (Chapter 6).

1.3.3 Objectives

Guided by the general methodology and to eventually fulfil the overall aim, there are five research objectives:

- i) The first objective is to construct a theoretical base. From this theoretical base, the hypothesis for the investigation into Chinese urbanisation research will be raised. In logic and thought, the theoretical base will embody the philosophical essence of the methodological problem of Chinese urbanisation research, and provide the general guidance for the investigation of the problem.
- ii) Secondly, the study seeks to identify a paradigm institution, which in practical investigation is a paradigm hierarchy, in Chinese urbanisation research.

As the theory of the paradigm will suggest, the essential reason leading to the problem of paradigm (i.e. the problematic paradigm could exist and escape challenges) is often the systematic interaction of problematic paradigms. When there is something wrong with one paradigm, the difficulty could become a systematic problem of the whole knowledge community but the elementary reason of the problem could be concealed by the systematic inter-support among paradigms. The problem of Chinese urbanisation research examined in this study is hypothesised to be a problem of the paradigm. It might involve a paradigm institution. The process of proving the hypothesis becomes practically the identification of a paradigm institution within the field.

Since its formation must have *de facto* undergone a stratified process of knowledge accumulation, a paradigm institution is in the first place a paradigm hierarchy, though after the paradigms have all been formed, the state of their existence is an interactive entanglement rather than a single-directional or linear logical flow. This provides a general methodology for recognising the paradigm institution. So in practical

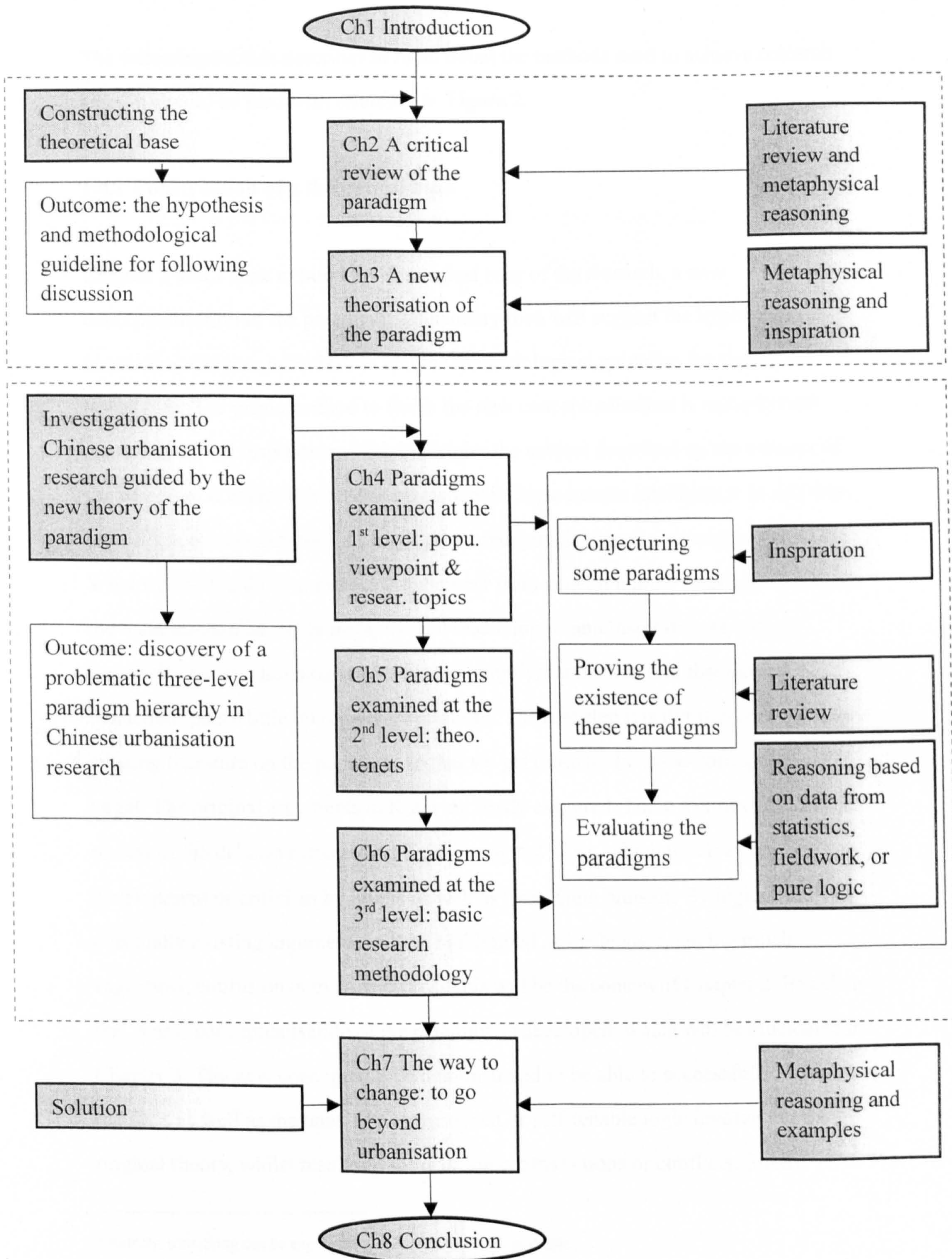
investigation into Chinese urbanisation research, a paradigm hierarchy will be identified, which will involve three levels of paradigms.

- iii) Thirdly, the study will seek to evaluate the extent to which the paradigms at each level of the paradigm hierarchy are dominant. To inform the relevance of the discovered paradigms, the study needs to evaluate whether these paradigms do exist and dominate in practice. Meanwhile, as these paradigms are supposed as problematic, there is the fourth research objective.
- iv) The fourth objective is to evaluate the extent to which the paradigms at each level of the paradigm hierarchy are problematic. If objective (i) provides the philosophical interpretation of the problem of Chinese urbanisation research, objectives (ii), (iii) and (iv) altogether understand the concrete contents of the problem within the context of Chinese urbanisation research. They inform what the problematic paradigms are, how these paradigms constitute a knowledge community and hence have fortified each other, and how they are dominant in the field and why they are problematic.
- v) Finally, the research will seek to suggest a solution for the problems it reveals. This is towards an alternative approach to Chinese urbanisation research. In this aspect, the theory of paradigm will have implied the general principles for the solution of a paradigm problem. That is, the elimination of a problematic paradigm often requires a systematic effort to change all relevant paradigms. And within the systematic effort, the starting point seems often the most fundamental paradigm, the idea closest to basic knowledge. The study will need to understand how these general implications can be applied to the context of Chinese urbanisation research.

Figure 2 profiles the research framework of this thesis. The left column of the figure indicates the objectives. Within it, objective (ii) and objective (iii) are to be achieved in

the investigations into Chinese urbanisation research. The middle column of Figure 2 is the arrangement of the chapters and the right column is to simply indicate the methods. The detailed interpretation of this figure will be seen in next section with the introduction of the research method.

Figure 2 Research Framework



1.4 Methodology

The following section describes in more detail the methods used to achieve research aims. It should be read with reference to Figure 2.

1.4.1 Construction of a theoretical base

Chapter 2 and 3 seek to build the theoretical base of the research, a new conceptualisation of the paradigm. This theory then will suggest the hypothesis concerning Chinese urbanisation and the methodological guideline for testing the hypothesis. The prime method to finish the new conceptualisation is metaphysical reasoning or/and inspiration. With hindsight, the subject described by the concept of the paradigm is essentially a basic element existing in human intelligence. In this case, the evidence necessary for developing the conceptualisation is universally available. What we need to do is to extract that element from general human thinking. Therefore the main method has to be metaphysical reasoning or/and inspiration (which is essentially the synthesising application of empirical induction and theoretical deduction⁴ plus a little bit of *pure* inspiration). The first step it is through reviewing the existing literature on the paradigm so that we get close to the to-be-conceptualised target. The original arguments in Kuhn are firstly explored. There follows an intensive review of the debates surrounding Kuhn's original ideas, which involves the development or criticism by others as well as later Kuhn himself. By logical analysis, eventually existing arguments will be highlighted as inadequate, having much vagueness, confusion or even mistakes. This will be the content of Chapter 2. Based on this, a new conceptualisation of the paradigm is developed, which will be elucidated in Chapter 3. The new concept will be demonstrated to be able to successfully articulate the facts as well as the unanimously accepted or self-tenable logic involved in the original theory, whilst resolving some of the contradictions or conflicts. Such

⁴ Namely, something can be explained as paradigms and still studiable.

interpretation essentially proves the validity and the relevance of the new conceptualisation.

1.4.2 Identification of a paradigm institution in Chinese urbanisation research.

As pointed out earlier, the general methodology to identify and evaluate a paradigm, which eventually leads to an identification of a paradigm institution, is provided by the theory of the paradigm. That is, to carry out a stratified process of knowledge dissection, which would lead to the discovery of a paradigm hierarchy though the actual surviving state of the involved paradigms in the paradigm hierarchy is not necessarily a single-directional logic.

The stratified investigation into Chinese urbanisation research begins from a group of paradigms, which seem superficial or apparent knowledge—they are visually pervasive in the field. These paradigms are basically the applied knowledge in the sense that they imply clear images of the development of Chinese urbanisation or the research. The logic of this first level of paradigms inspires the conjectures of the paradigms behind them. Similarly, the further speculation of the second level of paradigms will further lead to the discovery of the third level of paradigms.

Methodologically the identification of the paradigm hierarchy is a sophisticated process involving inspiration, logical reasoning and conjecture, empirical justification, and trial and error. But the written account adopts a concise and straightforward style of narration: describing the findings and justifying them. As a result, a three-level paradigm hierarchy is identified, which will manifest some fundamental problems with Chinese urbanisation research. Chapters 4, 5 and 6 altogether will represent the gradually deepening process of paradigm identification, with each chapter dealing with one level of paradigm. The logical coherence between different level of paradigms will be analysed in chapters 5 and 6. The validity and relevance of the findings will also be evaluated in respective chapters. That is, the evaluation of the

existence and the problematic of the paradigms, which will be introduced in the next two points. But once again, it should be emphasised that it is the systematic entanglement of all these paradigms that contributes to the paramount reason of the problem in Chinese urbanisation research. An integrated approach towards the three chapters is vital.

1.4.3 An evaluation of the extent to which paradigms in the hierarchy are dominant

The extent to which the paradigms at each level of the paradigm hierarchy are dominant will be tested by the method of empirical induction. The thesis selects a group of sample papers of Chinese urbanisation research. If the paradigms are found to be dominant in sample papers, then inferentially we can assume them as dominant in the whole research community. Two aspects need to be specifically addressed here:

The selection of sample papers

Obviously, like any “scientific research community”, Chinese urbanisation research, the object examined in this thesis, can only be loosely defined. This of course does not affect the relevance of such a survey. In a strict sense, logically as in any case of empirical induction research, the research conclusion is only valid in terms of the samples actually examined. Extension of the validity of the finding to other individuals is based on essentially unjustifiable logic, though researchers are trying to improve the “representativeness” of the samples. In this case, the sampling of Chinese urbanisation research is based on two leading academic journals, *Jingji dili* (Economic Geography) and *Chengshi guihua* (City Planning Review). Except for a few which were not available in archive, the entire issues of two journals — *Jingji dili* (1981-2000) and *Chengshi guihua* (1977-2000) — are reviewed. Two hundred and eighteen papers directly relating to the topic of Chinese urbanisation (which refers to rural-

urban demographic and spatial transition in China)⁵ were identified. So in a strict sense, this is the connotation that the term “Chinese urbanisation research” refers to in this thesis. As these two journals are the main platforms for publishing relevant research achievements and information (they are the top journals for publishing urbanisation research by economic geographers and urban planners), the survey result of these two journals can be inferred as largely applicable to the whole community of Chinese urbanisation research. Meanwhile, since all relevant papers in all issues of two journals are surveyed, this reduces the potential bias for the researcher to select particular papers. In this case, the findings can be considerably fair in representing the collectivity of the field, the “general” state of Chinese urbanisation research. Otherwise, if the present study employs other criterion to “select” sample papers, such as including some papers written by Chinese domestic scholars and some papers by scholars in other countries, it will be difficult to ascertain the representativeness of sample.

However, despite testing the extent to which some paradigms are dominant, it does not require the same kind of typicality when analysis or evaluation of paradigms is undertaken. So in this case, the thesis may exemplify some works, sometimes even from sources other than *Jingji dili* and *Chengshi guihua*. Particularly when, the existence and the working of the paradigms can be most easily explained by some of the relevant works. In fact, the study also surveyed the available work from other sources. This is to provide observations as widespread as possible. In the process of research, such general observation is the basic source of inspiration, particularly at the outset.

Work published after 1996 are given special attention. This helps to give a clear

⁵ Of course, the matching of this criterion with individual cases will also involve some loose factors, but this is also assumed not too significant damage to the relevance of the study.

perspective on the current situation, as the eventual aim of the research is to suggest the reform of the present. This will be further discussed below in introducing the method to evaluate the dominance of the paradigms.

The method testifying the dominance of the paradigms

The basic method is to compare the number of papers with a dominant idea or focus to those without such a perspective, for example the idea of a speeding up tendency for Chinese urbanisation. The methods adopted in different chapters vary according to different context. In Chapter 4, when examining the paradigm of the notion that China is at the stage of accelerating urbanisation, papers relating to this theme are identified. The proportion of such papers should in a sense reflect the degree to which this theme is dominant. Then comparison is done among those papers relating to this notion, so as to know the distribution of opinions in support and opposition of this idea.

Chapter 5 involves the evaluation of the existence and dominance of some theoretical ideas. These paradigm ideas are conceived as functioning as underlying premises for the development of thinking (which determined the occurrence of the paradigms discovered in Chapter 4). So first there is a logical reasoning of the coherence of this level of paradigm with the paradigms in Chapter 4. Then in empirically testing their existence in practical arguments, since the supposed intervention of these theoretical ideas in research is not necessarily in explicit formats (they may not appear, but their influence as premise is there and can be detected by logical reasoning), it is difficult to carry out a statistical analysis covering the whole of the two hundred and eighteen papers based on a single classification. The thesis has therefore to directly analyse some papers, demonstrating the operation of paradigms. Such a method cannot powerfully illustrate the extent that the paradigms are dominant. This is to be regretted, but the objective is to illustrate the principles of the argument.

In Chapter 6, follows a need to evaluate the dominance of basic research method

(empirical induction) and research scope (urbanisation phenomenon). Here the evaluation involves two aspects. Firstly there is a logical analysis to show the dominance of empirical induction research method and urbanisation phenomenon from the nature of the urbanisation theories discovered in the previous chapter. Since the theoretical orthodoxy, which often works as unconscious premise in Chinese urbanisation research, only gets a little direct interpretation or demonstration in actual Chinese urbanisation research, it is difficult to analyse such a relationship empirically. But secondly there will be an empirical assessment of the distribution of basic research methods and research scope in the two hundred and eighteen papers. The result of paradigm accumulation is that all paradigms could simultaneously operate in actual thinking activity, which is a vital feature of the mechanism of the paradigm. It is because of the interaction of inter-supported paradigms that any of them is difficult to reform. So if there are some methodological commitments behind the theoretical tenets, these methodological elements should have also considerably influenced the general research activity.

One more point is, as mentioned above, we hope our research can represent the most recent condition. This temporal requirement is also vital for the evaluation of paradigms since it is particularly with reference to contemporary socio-economic context that some paradigms are problematic. So in our analysis, the condition in recent years will be highlighted wherever possible. We also try to show the tendency of the dominance of a paradigm is a relatively long term characteristic. Since the sample papers examined in this dissertation cover about two decades (the 1980s and 1990s), there will be a separate analysis regarding the change over time. A relatively long time span is also essential for the investigation. It is through a certain time span that the paradigms and their context can be observed. Furthermore, as paradigms are inherited knowledge, to accurately understand them needs resort to their tradition, which also needs to understand the situation in the history.

1.4.4 An evaluation of problematic nature of paradigms within the hierarchy

After identifying the paradigms, Chapters 4, 5 and 6 will each appraise the extent to which the respective paradigms are problematic. It shall not be forgotten that *the progress through the three chapters* essentially also functions as a process of evaluation of each paradigm, with one chapter evaluating part of the base knowledge of the paradigms in the previous chapter. The paradigm evaluation *within each chapter* in a sense aims at a “quick” evaluation of the validity of the then uncovered paradigms, comparing with the relatively complex evaluation through the examination of the *actually-existing* premises of those paradigms (the latter is the strategic goal of the whole research). This is necessary because there are paradigms which are basically valid, or one problematic idea might have several premises whilst its problem might be determined only by one particular premise. So not just for informing the relevance of each step of progress, such “quick” evaluation is a must for avoiding unnecessary ineffective work. The evaluation within each chapter is titled as a “quick” one relative to the evaluation through paradigm dissection, because all sorts of evaluation of ideas seem to have some common basic logic, for example the premise and conclusion should be coherent in a valid logical development. Their difference is that the former strives for the simplest technical line of evaluation in methodology. This is possible because one idea could have various logical backgrounds (so there could be various demonstrations for a same question). Perhaps it will be found that the applied methods are outcome-oriented, namely from whether an idea ends up with satisfactory theoretical or practical implication rather than whether its theoretical reason is tenable, though philosophically these two are essentially the same.

The paradigms uncovered are of different characters. So the methods to evaluate them must also be different. The thesis has to match appropriate method for every particular context. Of course, the criterion (logic) for evaluation is the prime element for all evaluations. Based on this, more technical methods can be determined. In this respect, some evaluations are particularly empirical evidence based, whilst others mainly rely

on logical reasoning. But even in the latter case, empirical evidence is also employed in appropriate places. The empirical data of the study are mainly of the general situation of urbanisation process and socio-economic development, particularly urban population growth and employment. The data reflecting both the national and the local situation are included in order to give a comprehensive view. The data at the national level were collected mainly through the *China Statistical Yearbook* (CSY) and literature review. When data were not available at national level, through first-hand investigation we may be able to acquire some data at the local level which might also give macro implication, for example, data in relation to the temporary urban population or floating population. Furthermore, our research also relates to an understanding about the future, which needs some exemplification representing future tendency. In this case, the situation in a leading developing area might act as an example. All of these determine the need to sample at the local level. On the other hand, since the to-be-falsified argument is a universal proposition, one anomaly is sufficient to challenge it. So there only needs one example if it is an anomaly. These factors plus the consideration of feasibility determine that Suzhou City region is selected as the sample. Suzhou City region is an advanced-developing area in eastern coastal China. According to official sources (*Suzhou Statistical Yearbook*, 1999) and (CSY, 1999), the gross domestic product for 1998 in the Suzhou City region is the seventh highest among the 231 Cities at and above prefectural level in continental China. Suzhou City region has an area of 8,485 km² and 5,754,000 population at the end of 1998. The city region comprises one prefectural city (Suzhou City, the capital of the region with a population of 1,077,000), six county cities (about 100,000 to 200,000 population each) and of course, numerous towns and a large rural area. Such a scale is suitable for many facets of urbanisation process have to be surveyed. Data at the local level, related to Suzhou City region were gathered during fieldwork from December 1999 to January 2000. The author visited Suzhou City, Wujiang City and Kunshan City, interviewed relevant local officials and experts, and collected relevant data from official statistics and documentation.

Below we will address the concrete criterion and technical method for each paradigm evaluation respectively following the chapter sequence.

Method for paradigm evaluation in Chapter 4

The paradigms involved in this chapter are of two sorts: one is the notion that China is entering the stage of accelerating growth of urbanisation level, and the other is the favoured research topics in the field, relating to the overall macro trajectory of urbanisation; the optimal urban size and urban hierarchy; and, the urban system. The former gets evaluated from two respects. One is to compare this assertion with the actual trajectory of urbanisation process in China, namely to justify whether the actual urbanisation process fits the assertion. This evaluation obviously has to be based on empirical evidence. The key data are urbanisation levels in different years at both the national and the local scale. Here a vital technical point is the definition of urban population. Official statistics have been changing whilst the current official criterion is criticised as under- or over-estimated in the academic. In the thesis, the foundation evaluation is based on present official criterion, “city and town population”. But afterwards two sorts of possible rectification are analysed. One is to take into account the factor of urban temporary residents, a factor leading to under-estimation of current criterion. Another is to consider the influence of the administrative border of cities, a factor believed to lead to over-estimation. In all of these considerations, the central issue is whether the criterion is coherent.

Another aspect to evaluate the notion of a speeding-up urbanisation in China is to analyse the source contributing to urban population growth, specifically, employment demand. This is in the secondary sector to be discussed. The rationale is, if the employment growth in the secondary sector is a factor promoting urban population growth, then the decrease of such growth will have negative impact on urban population growth. General perception and the evidence from Suzhou City region all suggest that there is a tendency for decreasing employment opportunities. This change

therefore challenges the hypothesis that there is an accelerating tendency of urbanisation.

The evaluation of the selection of research topics has to rely on logical reasoning, and the criteria seem, inevitably, to depend partly on value-judgement. The stance of this thesis is that scientific research agenda should be able to cover the significant issues in terms of the development of human society. Significant issues in human society are often different in different contexts, and therefore the change of socio-economic context may also lead to the change of research agenda. Also, as the agenda represents the research focus, there is also a matter of “progress” of investigation. Since following the deepening of the investigation, people may find that either the original research problems have been solved, or, more importantly, there are fundamental issues beyond the original research problems and those issues should be firstly addressed. Based on these criteria, the dominant research themes in contemporary Chinese urbanisation research will be evaluated.

Method for paradigm evaluation in Chapter 5

Paradigms examined in Chapter 5 are theoretical tenets such as urbanisation has a law-determined trajectory, is a concomitant of development and industrialisation, and will follow certain spatial patterns. The examination towards the “valid” connotation of each tenet and therefore its limitation is the main criterion of evaluation. Hence in general, logical reasoning is the main method, and in some places empirical evidence is employed. Below we firstly introduce the logic for the paradigm evaluation and then introduce the empirical case.

The first tenet to be examined is that the growth of urbanisation level is a concomitant of development and will inevitably follow a law-determined trajectory. It is first argued that in terms of the world-wide urbanisation process which is assumed as supporting this tenet, at least there are two vague places. One is that although advanced

developed areas do seem to have a high level of urbanisation, high growth of urbanisation level is not necessarily followed by high level of development. Another is the identification of the law-determined trajectory for urbanisation level growth is actually based on incomparable data due to the different definition of the “urban”. These two points of vagueness all set limitation for the validity of the tenet.

Besides, theoretically at least the tenet does not and cannot answer two important questions. One is to what extent it is valid in the short term. The tenet is essentially long term oriented whilst its application is often *inevitably* short term oriented.

Another is to what extent the tenet is valid at a specific local regional scale. The tenet is essentially suggested from a general large region scope whilst its application is often inevitably for a particular and/or small sized region. In logic, the tenet itself embraces the implication of the existence of under-urbanised regions.

Secondly, the thesis will move to evaluate the tenet which holds that urbanisation is a concomitant of industrialisation. That this tenet could be problematic is primarily due to the recent change of employment, which has been related in Chapter 4. The stabilised or even decreasing employment demand in the modern secondary sector is likely to damage the conventional synchronism between industrialisation and urbanisation. Some may argue that a revised understanding of this principle would be tenable, such as, say, industrialisation will bring about more employment but not specifically in the second sector departments. Industrialisation will bring about the “multiplier effect” for employment in the tertiary sector or even the “informal sector”. Such a revision will be further discussed.

Thirdly, Chapter 5 will evaluate the tenet which holds that there are spatial laws associated with the urbanisation process. Two existing popularly accepted beliefs are analysed and all found to have limitations. One is the belief that there are optimal urban sizes. Another is the belief that there is a best pattern for the constitution of urban settlements in a region. Literature review shows that scholars have long noticed

that ideal patterns have never been able to successfully interpret the reality. Size is only one feature of an urban settlement and cannot represent too much. The hypotheses of ideal urban hierarchy are also found to be over-simplified. In fact, from common sense, even if there is really an ideal pattern, it is becoming more and more absurd to designate the size (and function) for a city in a market-based, competitive economy.

From all of these evaluations, either the theoretical tenets themselves or the application of them is problematic. With the awareness of the insufficiency or limitation of these theoretical tenets, there should have been a far more careful attitude towards them rather than the popular acceptance in Chinese urbanisation research as revealed by the examination.

Method for paradigm evaluation in Chapter 6

The paradigms uncovered in Chapter 6 are the empirical induction centred basic research methods and the urbanisation phenomenon research scope. To evaluate these paradigms, the method will be mainly metaphysical reasoning of the nature of induction and deduction logic. The responsibility of Chinese urbanisation research, though this has to be arbitrarily defined, is also part of the criterion evaluating the appropriateness of research methodology. For, different methods will lead to different research achievements, and the assessment of a method is to some degree to assess whether the destination of research can be achieved through the method. Meanwhile, the epistemological character of urbanisation in China, the subject of Chinese urbanisation research, will be taken into account, since the potential advantage as well as limitation of any method is partly determined by the object to which the method is applied. In this respect, the study will argue that there is good reason to consider that currently, the urbanisation phenomenon in China is induction-friendly, and this partly contributes to the inadequacy of the application of induction logic in Chinese urbanisation research.

1.4.5 Towards an alternative approach

Before formally beginning the discussion of the possible change, a historical overview of the disciplinary background of Chinese urbanisation research will endorse the conclusion about the paradigms, providing evidence illustrating the formation, consolidation and obsolescence of these paradigms. Such an analysis is implied by the theory of the paradigm. Since the paradigm is something inherited, it must have a historical source. So if the previous conclusions are right, then there should be some historical trace of the problematic paradigms from the disciplinary background or the development environment of Chinese urbanisation research. But it is beyond the capacity of the study to include a detailed investigation, since the formation and development of Chinese urbanisation research involves the tradition of research in relevant domain as well as the cultural soil of researchers themselves. Rather, the thesis attempts to illuminate some clues in relevant aspects.

The reason for introducing a practical case is that, since Chinese urbanisation research is the reference for the design of relevant practice, its insufficiency will lead to the problem of relevant practice. That is, the problematic paradigms will exhibit their existence, as well as problems, in application/practice. Actually the earlier discussion will touch this aspect, but with little detail. The case of Household Registration System reform will provide a more detailed example. The reason for choosing this case is that the Household Registration System is believed as a key administrative system regulating urbanisation in China. This examination will introduce evidence from first-hand survey in Suzhou area.

The last aim of the thesis is the suggestion for a paradigm change or “solution” to the problems of research, which is the central content in Chapter 7. The theoretical argument will be mainly based metaphysical reasoning. Previous investigation actually discovered a problematic paradigm institution in the knowledge community

of Chinese urbanisation research. It is beyond the capacity of the thesis to reconstruct another paradigm institution. Rather, the study seeks to build a solid starting point for the reconstruction of the knowledge body of Chinese urbanisation research. Some general points, particularly the basic research method which is the most fundamental element of the scientific community, will be covered in the discussion. Based on these implications, the study will initialise some clues for a new research agenda.

After theoretically suggesting the “solution” to the problems in Chinese urbanisation research, this study will further put it back to application. Echoing the examination of the disciplinary backdrop of the field, which providing threads helping understand the existence and problem of paradigms, the thesis will further evaluate some current development in international urban studies. The context is, given that the Western urban studies were ever influential to the form of Chinese urbanisation research, its new development seems to have largely lost such relevance. A popular explanation is that China and the West are in different “stages” of urbanisation, and thus it is reasonable if Chinese urbanisation research sticks to old styles of studies. But an analysis will demonstrate that the shift in international urban studies can be explained as being a result of continuous deductive exploration. The contexts and objectives in such exploration seem largely relevant to Chinese urbanisation research. Hence, it seems unreasonable to reject the relevance of the results of this exploration. However, the significance of this analysis is that the shift in international urban studies exemplifies how the continuous deductive exploration could lead to the progress in research. Conversely, the reason leading to the rejection of the relevance of new development in international urban studies to Chinese urbanisation research seems to highlight the lack of such methodology in the latter, which is another confirmation of this thesis’ conclusion of the paradigms in Chinese urbanisation research.

Nevertheless, this is not to suggest that the evolution in international urban studies must be suitable for Chinese urbanisation research. This will need further evaluation through strict, in-depth, innovative, and significantly aimed deductive examination.

PART II CONCEPTUALISING THE PARADIGM

Chapter 2: A Critical Review of Kuhn's Theory of the Paradigm

2.1 Introduction

The theory of the paradigm will be the theoretical base guiding the investigation into Chinese urbanisation research. The method of construction of the theoretical base is mainly metaphysical reasoning. The first step is a literature review of existing ideas about the paradigm. There are important merits in the original theorisation of the paradigm. But there are also many aspects which are vague and confusing. These problems have not been successfully solved in subsequent development or articulation. Due to the inadequacy of present ideas, the thesis aims to develop a new conceptualisation of the paradigm. This chapter includes a critical review on existing literature, by which we will get close to the target to be conceptualised in the following chapter. Kuhn's original arguments are firstly explored. There then follows a review of the debates surrounding Kuhn's original ideas, which involves the development or criticism by others as well as Kuhn himself. By logical analysis, eventually the vagueness and confusion in present literature will be highlighted.

For the theory, the thesis conceives that there are three key parts: the concept of the paradigm, the normal science and the scientific revolution. So the literature review is

organised around these three sub-themes in the forthcoming sections. A similar structure is also appropriate when comparing Kuhn's original arguments with later debates.

2.2 The original theorisation of the paradigm

The theory of the paradigm is fully addressed in Thomas Kuhn's *The Structure of Scientific Revolutions* (1962, 1970a). This present discussion is based on the second edition (1970a). Except where indicated, this is the source for all quotations⁶.

2.2.1 The concept of the paradigm

Methodologically, Kuhn states that his ideas in *The Structure of Scientific Revolutions* are derived from his observation of the history of science, particularly pure science such as physics or chemistry. The concept of the paradigm, as most will agree today, is the protagonist of the whole book⁷. In a narration which is mostly like a definition, paradigms are defined as some particular scientific achievements sharing two key qualities: very successful (sounds vague but is Kuhn's idea) and capable of opening a good research agenda.

Their achievement was sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity. Simultaneously, it was sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve. (10)

⁶ But since the "Postscript—1969" section in (1970a) is a totally new chapter comparing to (1962), which is actually one of Kuhn's many response-essays elucidating his development since (1962), we ascribe it to Kuhn's later development and hence treat it as a separate essay to be dealt with in next section.

⁷ That is a reason that the writer uses the name "the paradigm theory" or the like. Whilst in literature, it is normally called as something like "Kuhn's philosophy of science". Another reason is, the concept of the paradigm is the most illuminating point in Kuhnian thought relevant to our investigation of Chinese urbanization research, at least in the very beginning. It was when the writer was striving to answer the question why contemporary research on Chinese urbanisation was likely to become more and more irrelevant, that he recalled the word "paradigm".

But taking Kuhn's entire argument, it is difficult to equate the concept of the paradigm with the above definition (will be touched in detail in section 2.3.1). Kuhn actually uses the paradigm in various senses.

Functionally, the paradigm suggests what should be done and the process of subsequent scientific enquiring.

Kuhn emphasises that the determination of paradigms (on research) is not the same as the determination of theories or rules. A key feature with paradigms is they are "prior to the various concepts, laws, theories, and points of view" (11). Paradigms "can guide research even in the absence of rules" (42).

To further illustrate that the priority of paradigms is not only possible but also reasonable, Kuhn employs an analogy from Wittgenstein: what do we need to know in order that we apply terms like "chair," or "leaf," or "game" unequivocally and without provoking argument? Correspondingly the answer to paradigms is, "they may relate by resemblance and by modeling to one or another part of the scientific corpus which the community in question already recognizes as among its established achievements" (45-6). There are also some other reasons which can illustrate the priority of paradigms. For example, students can learn to do research by learning some realistic "problem-solving" processes other than theories, where Kuhn believes the problem-solving processes involve paradigms.

Above are the main direct arguments which can be used in shaping the concept of the paradigm. However, in applying this concept, Kuhn often employs other *words* in the place of paradigm. An often-used word is "theory". But since all of these alternatives appear in concrete argumentation, which provides the context for understanding them, it is better to see them in context. So a review of the concepts of the normal science and the scientific revolution also plays a role in understanding the concept of the paradigm.

2.2.2 Normal science

Kuhn locates the paradigm thesis in his narration of the succession of scientific development stages: the normal science and the scientific revolution.

By normal science Kuhn means research firmly based upon paradigms. Normal science got its name because it was believed to dominate scientific research. Kuhn classifies the entirety of research problems constituting normal science into three types: determination of significant fact, matching of facts with theory, and articulation of theory such as reformulation of the paradigm theory in an equivalent but logically and aesthetically more satisfying form. These research problems, which are studied in practice research activity both empirically and theoretically, are believed as almost exhausting the literature of science.

Kuhn however does point out that there exists "abnormal" science. In fact, he believes that in many disciplines, the occurrence of normal science, or the acquisition of paradigms, is a very recent event. It is regarded as an open question what parts of social science have yet acquired such paradigms at all. But on some grounds, Kuhn believes that the acquisition of a paradigm and of the more esoteric type of research it permits is a sign of maturity for science. These reasons derive from the fact that in normal science, namely when a paradigm has gained acceptance, many research premises are clear. So the research will have a better focus and be better prepared in ideas and methodology. In-depth penetration becomes feasible. Normal science provides the basis for the formation of a scientific community having a shared research agenda. By contrast, Kuhn argues, in the absence of a paradigm or some candidate for a paradigm, abnormal science would be almost a random fact-gathering activity and meanwhile perhaps only able to collect data that lie ready to hand.

From the research problems of normal science, Kuhn concludes that a key characteristic of normal science is that is a kind of puzzle-solving activity. Puzzles are

something like the questions with answers ready in advance. They are not genuine problems, but rather serve to test the scientists' ingenuity or skill in solution. Kuhn remarks that normal science projects do not aim to produce basic conceptual or phenomenal novelties.

Such puzzle-solving activity is of course applaudable for Kuhn, since by definition it is eminently successful in its aim of the steady extension of the scope and precision of scientific knowledge. This consequence is regarded to contribute one of the two main merits that science could produce. Moreover, Kuhn contests that normal science will autonomously lead to another main merit of scientific knowledge—novelties of fact and theory. This process, which sometimes leads to scientific revolution, will be reviewed in the next section.

2.2.3 Scientific revolution

Kuhn believes that normal science, namely paradigm-dominated research will naturally lead to significant knowledge innovation. The mechanism was highlighted very early, when Kuhn cites Francis Bacon's dictum, "Truth emerges more readily from error than from confusion" (18). In practice, what emerges first is termed as "anomaly" (rather than error), the kind of phenomenon not fitting the paradigm-induced expectations. The paradigm provides the reference indicating the anomaly. Hence only persons familiar with the paradigm are ready to see anomalies.

Once scholars have committed to a paradigm, they will not easily give up their adherence to it. Such resistance is said to be beneficial in guaranteeing the accurate and in-depth examination on the anomaly. In the meantime, scientists will work hard to articulate the anomaly with the paradigm. In most cases, this will be successful. Either the paradigm or the slightly modified paradigm (Kuhn does not clearly address what is meant by a slight modification) will be eventually able to embrace the anomaly as an anticipated puzzle. Until the process of articulation of the anomaly within the

paradigm is completed, Kuhn argues, the anomaly is not a discovery. This is related to Kuhn's idea that scientific fact and theory are not categorically separable. That is, before you give a satisfactory theorisation of the fact, the fact can still be considered as a paradigm fact, an "old" fact.

If an anomaly is *very* anomalous, that is, the normal modification of the paradigm cannot accommodate it, there comes the "crisis" period heralding the emergence of new theory. As to the candidates for alternative theories, Kuhn considers that they could have been there for a long time but simply ignored in the absence of crisis. It is not necessarily difficult to invent candidate paradigms, but scientists seldom do so because it is an extravagance in normal science when there already exists a usable paradigm.

Kuhn argues that when a new *theory* is accepted to replace the previous one, it constitutes a scientific revolution. But Kuhn cannot explain how such accession happens. His eventual understanding is that a scientific revolution has to be an "incommensurable" conversion comparable to the value re-selection in political revolution. The key is that there seems no rational way to select between two rival paradigms. Firstly, to compare the "perfection" of two theories: while neither can solve all problems, each must be able to solve some. One may be able to solve some problems the other one cannot, and *vice versa*. Kuhn also believes that it is invalid to compare paradigms according to what they can solve because in this case, a paradigm's "range of application must be restricted to those phenomena and to that precision of observation with which the experimental evidence in hand already deals. [Whilst] such a limitation prohibits the scientist from claiming to speak 'scientifically' about any phenomenon not already observed" (100).

Secondly, despite these "difficulties" for the comparison between rival paradigms, another central reason leading to the "incommensurable" is that each paradigm uses its own criteria to judge its own capacity, because there are actually no neutral criteria

available. Here the argumentation is that, on the one hand two paradigms must be logically incompatible, otherwise there is no need for a new paradigm (the articulation of the old paradigm will be able to achieve the solution). On the other, because of the incompatibility, the two paradigms have no "common language" such as criteria to judge them. Nor are there neutral supra-paradigm criteria. Kuhn states that "as in political revolutions, so in paradigm choice—there is no standard higher than the assent of the relevant community (94)", "there can be no scientifically or empirically neutral system of language or concepts (146)". So "the proposed construction of alternative tests and theories must proceed from within one or another paradigm-based tradition (146)". This point is implicitly linked with the idea that theory and fact are inseparable, because when a fact is used to judge a theory, it has been in some sense articulated by some one theory. Kuhn regards this (the unavailability of the neutral criterion) as the insoluble difficulty. As a result, each paradigm has to employ its own criteria to defend itself.

The last reason leading to the incommensurability is that a thorough communication between the paradigm and its rival is impossible. This is because many concepts in a new paradigm are the same as in the old paradigm but with different meanings. So the misunderstanding between the defenders of the rival paradigms is inevitable.

Though all the above show that the judgement between two rival paradigms is so difficult, scientists must make this judgement because the "decision to reject one paradigm is always simultaneously the decision to accept another" (77). All of these contradictions result in no single or uniform process for paradigm replacement.

"Individual scientists embrace a new paradigm for all sorts of reasons and usually for several at once" (152). It could be based on the new paradigm's promise to solve future problems. Or it could be its capacity to solve the problem that led the old one to a crisis. Or it just appeals to "the individual's sense of the appropriate or the aesthetic—the new theory is said to be 'neater,' 'more suitable,' or 'simpler' than the old" (155).

After all, the only point that can be confirmed is that crisis prepares the occasion for

paradigm substitution, for in such circumstances the authority of the old paradigm is somewhat damaged.

The situation in which people will use the same word but with new connotation after a scientific revolution is then extended to the idea of “world changes”. That is, led by the new paradigm, scientists see *different* things in places they have examined earlier. This point is also intimately linked with Kuhn's idea that fact and theory are inseparable. That is, if a scientist *sees* something (even the same thing as in the context of the old paradigm), it is through the spectacles of the new paradigm, and the observation is what the new paradigm expects. Kuhn further extrapolates by stating that scientific education is exactly training students to acquire such kinds of spectacles. To make all possible elements fit the box of the new paradigm this is the nature of normal science. So due to the filtering effect of today's science, people today conceive that they see the same thing as their ancestors, but they do not.

Since scientific revolution leads to a “new world”, Kuhn suspects if there is really truth or science is pursuing truth. He stresses that knowledge is not accumulating. It is the substitution of discontinuous paradigms. The goal of science is “progress” rather than truth. Normal science makes efficient progress because scientists are more concentrated, better focused, and even their achievements only need to be evaluated by colleagues. Scientific revolution is also progress since the post-revolution period (the new normal science period) disguises the event of revolution through a rewriting of the textbooks with the new paradigm theory. This makes the adherents of the field believe that there has been continuous progress.

2.2.4 Summary of Kuhn's ideas of the paradigm

By definition paradigms are exceptionally successful scientific achievements, but Kuhn also uses other words like "theory" in place of "paradigm". However a key feature of the paradigm is that paradigms may exist and operate prior to the existence of theories or rules.

Paradigms are the relatively stable platforms allowing scientific research to be well focused and in-depth. Thus paradigms are indicators of mature science. Normal science is always controlled by a paradigm, and henceforth is eminently successful in implementing the steady extension of the scope and precision of scientific knowledge. Such research behaviour (normal science) is to solve puzzles, where the potential outcomes have been pre-defined in the paradigm, rather than to pursue genuine innovation.

But paradigms also automatically lead to innovation. Innovation comes from the conflict between the paradigm and the reality. Due to the existence of expectation implied by the paradigm, scientists are able to discover the anomaly, the fact divergent from the explanation by the paradigm. When, and only when, the paradigm is adjusted to be able to explain the fact, a real discovery or a new theory arises. If a new theory is accepted, then there is a paradigm shift, a scientific revolution. But how the conversion from an old paradigm to a new one occurs is unclear. On the one hand, the process by which the candidate for a paradigm (a new theory; equally a discovery) emerges is not clear. On the other, even when there has been a candidate for paradigm shift, there is no way to rationally select between the rivals since the comparison between paradigms is incommensurable. So the paradigm shift is, rather, a kind of incommensurable break, a manifestation that science is not pursuing truth and knowledge is also not accumulating.

Are these ideas acceptable? Now we proceed to the debates about Kuhn's approach.

2.3 Debating the theory of the paradigm

The aim of this section is to sharpen the focus on the paradigm thesis, the potential merits of which are the source inspiring the new conceptualisation in the following chapter. The available relevant comments, criticism, and development of the paradigm thesis (including Kuhn's own defence and development) are brought together. As mentioned earlier, this part is organised in a similar structure as the previous one, with three main parts respectively concerning the concept of the paradigm, the normal science and the scientific revolution.

2.3.1 What is a paradigm?

It is widely accepted that Kuhn's argument is a quasi-poetic and somewhat vague style. This seems particularly apparent in respect of his usage of the term paradigm. Masterman (1970) suggests that Kuhn uses the term "paradigm" in twenty-one different ways. Though careful examination of her review may find this an exaggeration, it does illustrate the multiplicity of meanings of the term paradigm. After seeing a draft of *The Structure of Scientific Revolutions*, perhaps as the first critic, the then Harvard President, James Bryant Conant complained to Kuhn that "paradigm" was "a word you seem to have fallen in love with!" and "a magical verbal word to explain everything!" (Weigberg, 1998: webpage).

In general, there are three main areas of usage of the term paradigm and most of the discussion or debate are evolved predominantly around them. One is Kuhn's "formal" definition, within which paradigms are some unprecedentedly successful scientific achievements. Gutting (1980), for example, claims himself whole-heartedly agreeing with this definition. The second definition sees paradigms as theories; for instance Kuhn says "to be accepted as a paradigm, a theory must seem better than its

competitors...” (1970a: 17). When Popper says “[Kuhn’s] schema of ‘normal’ periods, dominated by *one* ruling theory (a ‘paradigm’ in Kuhn’s terminology)...”(1970: 54), he appears to regard a paradigm as a theory. So does Feyerabend when he says, “[Kuhn’s] recipe, ...is to restrict criticism, to reduce the number of comprehensive theories to one, and to create a normal science that has this one theory as its paradigm” (1970: 198).

The third definition regards a paradigm as a set of commitments, all possible intellectual elements systematically determining the scientific community. For instance this is what Kuhn refers to in saying that “the existence of this strong network of commitments—conceptual, theoretical, instrumental, and methodological—is a principle source of the metaphor that relates normal science to puzzle-solving” (1970a: 42). Weinberg agrees that a paradigm is a set of commitments, which “describes a consensus view: in a period of normal science, scientists tend to agree about what phenomena are relevant and what constitutes an explanation of these phenomena, about what problems are worth solving and what is a solution of a problem” (1998: webpage).

There are some other conceptions. Though they are different in the expression of language, their essential similarity makes it appropriate to classify them into the third definition. For example, Masterman (1970) concludes that a paradigm is a set of scientific habits that can operate effectively before the appearance of theories; this set of habits is something adhering to some trick or technique or insight dealing with the research in a field, and it can be analogically applied to other occasions: a kind of original concreteness or crudeness. Similarly, although Gutting agrees that the paradigm is formed from specific scientific achievements, he meanwhile also states that the paradigm reveals some “‘super-theory’—a very general scientific worldview... a diverse assemblage of law, method, and metaphysics” (1980: 1-2).

Of all these diverse interpretations of paradigm, which one is the most appropriate? In

the literature, a central debate is whether or not a paradigm is a theory. Most of those who attack Kuhn seem to conceive of a paradigm as a theory (such as Popper, cited above), whilst Masterman offers a defence: "...whatever synonym-patterns Kuhn may get trapped into establishing in the heart of his arguments, he never, in fact, equates 'paradigm', in any of its main senses, with 'scientific theory'" (1970: 66-7). Weinberg also remarks:

Kuhn was right that there is more to a scientific consensus than just a set of explicit theories. We need a word for the complex of attitudes and traditions that go along with our theories in a period of normal science, and "paradigm" will do as well as any other. (1998: webpage)

In some sense, this is of course right. At least, the formal definition does not define a paradigm as theory. But in fact, in the original book "theory" is perhaps most usually, though not always employed to substitute for "paradigm" (also noticed in Hoyningen-Huene, 1993: 142-3). This probably demonstrates that even to Kuhn himself, the proposition that "a paradigm *is not* a theory" is questionable. But notice here, the reverse proposition is not "a paradigm *is* a theory". For instance it could be "a paradigm *is not necessarily* a theory".

Later Kuhn himself makes some clarification. In (1970b) he defines the paradigms in these two senses:

On the one hand, it stands for the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community. On the other, it denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science. (1970b: 175)

That is, the paradigm is the entire constellation of the commitments in a scientific community, basically the third sense of definition as above, or particularly one element *within* that constellation, the exemplar, basically the first sense of definition as above. This is repeated in Kuhn's "Second thoughts on paradigms":

Our [One] sense of "paradigm" is global, embracing all the shared commitments of a scientific

group; the other isolates a particularly important sort of commitment and is thus a subset of the first. (1977b: 294)

In terms of the third sense of definition of the paradigm, Kuhn ever wanted to use a phrase “disciplinary matrix” to substitute for the word “paradigm”:

...‘disciplinary’ because it is the common possession of the practitioners of a professional discipline and ‘matrix’ because it is composed of ordered elements of various sorts, each requiring further specification. (1977b: 297)

These clarifications seem to tell that the third sense of definition is the primary concept of the paradigm in Kuhn's mind, but he meanwhile emphasises the importance of the exemplars as paradigms. Kuhn seemingly tries to introduce a broad-narrow dual resolution of the definition. But a subtle question here is whether the broad sense of the paradigm refers to the inseparable entirety of the commitments in a field, or any element of that entirety could also be a paradigm. The latter arises as a possible alternative since exemplar, which is explicitly understood as an element or a subset of the commitment entirety, could be paradigm. So why could other elements of the constellation, hence theory, belief or value and so on, not be paradigm? If a paradigm could be any shared piece in a given community, then a theory also could be a paradigm. So it is not that “a paradigm *is not* a theory” but “a paradigm *is not just* a theory”. In this sense Kuhn is trying to emphasise that the exemplars are as important as any theories or concepts etc for students to learn and get access to a scientific community. But this point, while obviously essential, has not been made clear, and this must be a reason leading to the debate.

In fact, the definition of the paradigm as the totality of all commitments in a scientific community is confusing, since the nature of the “commitment” is not really clear. The commitment is used to cover everything shared by the members of a community such as a theory, an exemplar, an idea, a belief, a habit (as Masterman identified) and so on. Then what is the sum of so many things and are they connected systematically? The implication embraced in these questions perhaps highlights the inevitability that

Kuhn's concept of the paradigm becomes mysterious and difficult to be interpreted. Even Kuhn's explanation of the content of the commitment is also contradictory, for as an example, at least, a theory and an exemplar are clearly not two juxtaposed items. They could not be two objects determined by one criterion. There is no clear criterion to detach the theoretical component from an exemplar. It seems appropriate to suggest that Kuhn is trying to describe something attached with some particular scientific achievements.

Actually in the three terms (exemplar, theory and commitment or the constellation of the commitments, disciplinary matrix), in appearance only theory has a clear connotation for the context. Not surprisingly Hoyningen-Huene (1993) notes that Kuhn later abandoned the terminology of disciplinary matrix and is less fond of talking of exemplars. Rather, he resumed talk of theories and theory choice. But obviously, theory is still not the best term for Kuhn, otherwise he would have adopted it straightforwardly.

- In fact, Kuhn's quandary is explicitly expressed in his own argument. Take his conclusion in "Second thoughts on paradigms". There, Kuhn evidently points out that his initiative to use the word "paradigm" is to refer to "exemplars". However:

Unfortunately, having gotten that far, I allowed the term's applications to expand, embracing all shared group commitments, all components, all components of what I now wish to call the disciplinary matrix. (1977b: 318)

Kuhn continues to remark that the consequence obscured the original reasons for introducing a special term. But those reasons still stand and he regards this paper as an effort to isolate, clarify, and drive home those essential points. The result from this effort for Kuhn seems a reluctant, somewhat sad compromise: to let the concept go but hoping people will remember the points originating the concept:

If they (the points originating the concept) can be seen, we shall be able to dispense with the term "paradigm," though not with the concept that led to its introduction. (1977b: 319)

That is, essentially Kuhn admits that all the later developments by himself and others are appropriate here and there comparing to the primary elements leading to Kuhn's invention of the concept of the paradigm. He himself is actually yet unable to give his own most satisfactory conceptualisation and chooses to tolerate the divergences.

It is clear that the existing literature does not result in a unanimous and logically tenable definition of the paradigm. There is a need of a new conceptualisation. And this cannot be achieved merely through literature review. In fact, we may be forced to consider, what criterion are required to evaluate the definition of a concept? We may be accustomed to regard the inventor of a concept as the main authority by which it is judged. This may be the reason that there are few efforts to re-conceptualise the paradigm even though many feel Kuhn's conceptualisation is inadequate. Taking the inventor as the authority is to admit that a concept is thoroughly subjective. Such a concept is a purely intellectual product. But there is still a totally different criterion available for conceptualisation. If a concept is to reflect some existence, then this existence is the measure for the concept. The paradigm is such a concept. No matter how abstract the concept is, it is a mirror image of some existence. Both Kuhn's own argumentation and the reaction the paradigm thesis aroused proved this point. Kuhn repeatedly proclaims himself as the "historian-author" of the theory (Kuhn, 1977b). The supporters of the theory hold that the paradigm reflects something truthful, though they *de facto* have no consensus about what is the truth. Whilst the critics simply deny this, they argue the paradigm is not true. So some true existence is the basis of the concept of the paradigm, and with such a commitment, a new conceptualisation of the paradigm can and will be established in the next chapter.

In the next two sections, we move to review the debates about the normal science and the scientific revolution. Understandably, when the core concept remains problematic, the subsequent argumentation cannot be very clear and persuasive. There is even a question whether such further reviews are worthwhile since it seems the problem of

the concept should be solved in advance. However, the reviews are necessary.

Although the concept of the paradigm is the key of the whole approach, the fundamental basis of the argument of the normal science and the scientific revolution is still the objectivity the whole thesis tries to reflect. The concept of the paradigm is to symbolise the objectivity whilst the normal science and the scientific revolution are in essence designed to elucidate the working of the objectivity. Normal science and scientific revolution reflect various facets of the same thing. So given the problematic relevant elucidation is, it is still of the source helping us get closer to that objectivity.

2.3.2 Is normal science a danger?

For many critics, Kuhn's normal science is totally unacceptable since it is seen as a threat to science. Firstly such negative opinions will be reviewed. But for defenders of the normal science, such criticisms misunderstand Kuhn. So next we will mainly see the defence's opinion, particularly Kuhn's own feedback in (1970c), which is actually identical to the main opinions of other defenders. Thereafter our analysis will show that something essential has been missed in this critical "dialogue" between the defenders and rejecters of the normal science thesis. It is this point that is worth more serious examination.

It is after all the so-called "puzzle-solving" feature of normal science that allows some critics to attack normal science as a danger to science. These critics generally admit to the existence of the state of normal science in scientific research, but they deny the significance of such a state. Only a secondary scientist will consent to solve puzzles. Representatively, Popper comments, other than "normal", normal science,

...dominated by *one* ruling theory (a "paradigm" in Kuhn's terminology) ... [is] a danger to science and, indeed, to our civilization... It is the activity of the non-revolutionary, or more precisely, the not-too-critical professional: of the science student who accepts the ruling dogma of the day; who does not wish to challenge it; and who accepts a new revolutionary theory only if almost everybody else is ready to accept it—if it becomes fashionable by a kind of bandwagon effect. To resist a new fashion needs perhaps as much courage as was needed to

bring it about. (1970: 52-54)

By contrast, Popper claims that the essence of science is critical. Science consists of bold conjectures, controlled by criticism, and therefore it is appropriate to be described as revolutionary. The so-called one-theory-dominated period can only be temporary:

... we are prisoners in a Pickwickian sense: if we try, we can break out our framework at any time. Admittedly, we shall find ourselves again in a framework, but it will be a better and roomier one; and we can at any moment break out it again. (*ibid*: 56)

After all, Popper ascribes his divergence from Kuhn to the fundamental notion on science, which in him is a critical discussion and a comparison of the various frameworks is always possible. Whilst in Kuhn, Popper remarks, he exaggerates a difficulty into an impossibility hence prefers psychology rather than logic of discovery. Thus Kuhn has got trapped by the “the Myth of the Framework, ... in our time, the central bulwark of irrationalism” (*ibid*: 56-57).

Watkins hence comments that Kuhn's view of the scientific community is “an essentially closed society, intermittently shaken by collective nervous breakdowns followed by restored mental unison”; whilst in Popper “the scientific community ought to be, and to a considerable degree actually is, an open society in which no theory, however dominant and successful, no ‘paradigm’ to use Kuhn's term, is ever sacred” (1970: 26). He cites Kuhn's own words to sharpen Kuhn's main conflict with Popper: “it is precisely the abandonment of critical discourse that marks the transition to a science” (*ibid*). Watkins points out the underlying reason for Kuhn to hold this stance is that in normal science, the genuine testing of prevailing theories is impossible. What Watkins refers to here is obviously the incommensurable thesis, which did not appear until the argument of the scientific revolution in Kuhn. Some fundamental logical coherence of Kuhn's original argument is unravelled here. Watkins further argues that it is desirable that a theory should be defended with a certain dogmatism, so that it is not knocked out too quickly before its resources have been explored. But he emphasises that such dogmatism is healthy only so long as there are other people

around who are not inhibited from criticising and testing a tenaciously defended theory. Otherwise, "if everyone were under some mysterious compulsion to preserve the current theories of science against awkward results, then those theories would ... lose their scientific status and degenerate into something like metaphysical doctrines" (Watkins, 1970: 28).

Toulmin (1970) also remarks that though people can accept a *philosophical* point, namely that there is always something like the paradigm in science like the role of the methodology, "this particular point does nothing at all to establish that *dogma* has any part to play in scientific theory" (40). On the contrary, it is always open to scientists to challenge the intellectual authority of the fundamental scheme of concepts within which they are provisionally working. He believes that the situation of normal science is a *sociological* point which describes the phenomenon that people may tend to follow authorities. This tendency is also regarded as a feature of the secondary researchers who "see only part of the intellectual picture in the subject with which they are concerned, and ... restrict the choice of hypotheses by which they interpret their data, out of deference to the supposed example set them by a primary worker, whom they take as their master and whose *magisterial* authority they bow to" (Toulmin, 1970: 40).

Feyerabend (1970) perhaps makes the harshest evaluation on the normal science thesis. He describes it as "organized crime" (200). He admits that the normal science thesis does grasp an important phenomenon of science. Normal science is a necessity of scientific advance. But on the other side he warns that there does exist the normal, or conservative, or anti-humanitarian element in the practice of science. This is something that should be avoided. Feyerabend emphasises that a certain degree of insistence on the paradigm and the production of alternatives must occur concurrently and interactively. Scientific progress relies on tenacity as well as proliferation. To individual practitioners of science, there are some scientists, perhaps the majority, preferring the work of puzzle-solving which altogether is referred to as a normal

component of science by Feyerabend. But at the same time there is always the philosophical component, the members of which, whilst aware of the normal practice, are also able to think in a different way. Feyerabend thus contests:

... one should not be misled by the fact that the normal component almost always outweighs its philosophical part. ... Nor must we be overly impressed by the fact that most scientists would regard the philosophical component as lying outside science proper and that they could support this attitude by pointing to their own lack of philosophical acumen. For it is not they who carry out fundamental improvement but those who further the active interaction of the normal and the philosophical component (this interaction consists almost always in the criticism of what is well entrenched and unphilosophical by what is peripheral and philosophical). (1970: 213)

To these attacks, Kuhn and his defenders simply emphasise that critics have misunderstood the original arguments. These involve several issues. One common point is, there is misunderstanding about a paradigm as a theory. Kuhnians emphasise that there is something more fundamental (a paradigm is something that can work in the absence of theory), which is really described by the paradigm and on which the normal science is based. But from our review in the previous section, the relevance of such a defence is suspect because it is actually not clear even in Kuhn himself whether a paradigm could be a theory.

Another point of defence is that critics have misunderstood the idea in an extreme way. It is emphasised that Kuhn reveals the existence of normal science, but he does not exclude other features of science. Their logic is: Normal science does exist. Since normal science exists, it *could be* useful. And to hold that normal science is useful does not necessarily exclude other characters of science. Kuhn (1970c) points out that unlike Popper or some others' stance, normal science does not only exist in terms to secondary scientists, namely a particular group of scientists. On the contrary, normal science is one of two components of scientific research. It is the opposite side of the coin to "revolutions": in science there cannot be continuous revolutions, the rejection and replacement of a framework or of some of its integral parts. Something different must necessarily go on in between, and that is normal science. So it is logically

incoherent for his critics (except Toulmin, who does not “admit” the existence of the scientific revolution) to admit the existence and the essentialness of the normal science (i.e. frameworks are necessary to scientists, if to break with one is inevitably to break into another) but in the meantime believe that frameworks are freely dispensable:

...if frameworks are the prerequisite of research, their grip on the mind is not merely ‘Pickwickian’, nor can it be quite right to say that, ‘if we try, we can break out of our framework at any time’. (242)

Kuhn argue that “frameworks must be lived with and explored before they can be broken. ...I urge the desirability of an alternate strategy which reserves such behaviour for special occasions” (247). Scientists for the first time should have an alternative to carry on the normal science other than the revolution.

Thus, normal science is an alternative namely; it is not exclusive. Kuhn states that his single genuine disagreement with Popper about the normal science is that scientists should not always criticise and pursue theory proliferation. Conversely, they can aim to solve puzzles. But this in no way prohibits them from challenging the theories. As a result, Kuhn concludes that his position does not depart very greatly from some of his critics, including Popper:

I hold that in the developed sciences occasions for criticism need not, and by most practitioners ought not, deliberately be sought when they are found, a decent restraint is the appropriate first response. Sir Karl, though he sees the need to defend a theory when first attacked, gives more emphasis than I to the purposeful search for weak points. There is not a great deal to choose between us. (247)

From above defence, it seems that much of the divergence over the normal science thesis arises from inaccurate expression and understanding. Borrowing from Gutting's remark, critics do not regard “what Kuhn is in fact suggesting to be a real possibility” (1980: 7). In any case, it simply implies that normal science is a *possibility worth practising*. But scientists could have other choices. You can always try to challenge existing theories. Kuhn does remark that he cannot accept Popper's comment that we

can break out of our framework at any time and into a better and roomier one. But his objection is to emphasise the usefulness of the normal science: frameworks must be lived with and explored before they can be broken.

Such a synthesis does seemingly end the debate: there are actually few essential differences. A vital question then is, what is the real value of the normal science and of the paradigm? In a general/philosophical sense the paradigm and the normal science represent the condition for survival of scientific research. But in a concrete sense, any one particular paradigm is extremely volatile in nature. Its value is to serve its self-destruction. After all, “the central episodes in scientific advance—those which make the game worth playing and the play worth studying—are revolutions”, that framework-breaking work (Kuhn, 1970c: 241). The paradigm (framework) is the premise for any “revolution”; but its preparatory function after all serves its self-denial. And if they like, scientists could even continue changing their paradigms.

In fact, in the “dialogue” between Kuhn and his critics reviewed above, Kuhn's defence does not really fit his original argument in *The Structure of Scientific Revolutions*. According to that book, the normal science has a more essential role. It is the *inevitable* premise for scientific revolution. It is one of the two forms of scientific progress, the aim of science, whilst another form is the scientific revolution. So no wonder it is said that Kuhn later becomes less revolutionary than when *The Structure of Scientific Revolutions* was published. Perhaps Kuhn's revolutionary character really derives in the main from his stylistic rhetoric.

The question arises as to whether Kuhn was trying to make some retreat, noticing that his original argument was somewhat biased. There is much critical comment over Kuhn's “rhetorical exaggeration or play upon words” (Toulmin, 1970: 39; Stove, 1982; Feyerabend, 1970). In other words, Kuhn's rhetoric makes his argument appear revolutionary. In this sense, Kuhn's later defence would better be regarded as a kind of “neutral” elucidation of his discussion. Toulmin (1970: 41) remarks, “he appears to be

withdrawing somewhat from that original, exposed position, to a less extreme one...". Additional evidence seems to support this viewpoint. For instance in one essay before *The Structure of Scientific Revolutions*, Kuhn (1977a) clearly points out that his aim is to rectify the fashionable biased notion on science, which over-emphasises the importance of divergent thinking. By contrast, he believes that "something like convergent thinking is just as essential to the scientific advance as is divergent.... Very often the successful scientist must simultaneously display the characteristics of the traditionalist and of the iconoclast" (*ibid*: 226-227). So from such argument what we can get is very likely that normal science is an alternative. But such a kind of dialectic is somehow missed in *The Structure of Scientific Revolutions*. The normally divergence-dominated nature of science becomes the Kuhnian convergence-domination, and only in extraordinary science there is the need for divergent thinking. So this evidence seemingly proves that Kuhn is trying to withdraw from the biased stance.

But if this is the case, then obviously, the positive of the normal science does seem like the new clothes of the philosophical emperor (Stove, 1982) and the significance of the normal science as well as any particular paradigm seems really suspect. That is, the significance of the whole paradigm thesis will be suspect. In fact, something essential is missed here, that is decisive for the relevance of the paradigm approach. And that failure is in some sense *coherent* throughout Kuhn, beginning from his mysterious recognition on the concept of the paradigm, to the unjustifiable value of the normal science, the "incommensurable" for the evaluation of the paradigm and at last, the no-truth ideology for science. Before this can be explored further, the debate on the scientific revolution must be reviewed firstly.

2.3.3 The revolution that didn't happen⁸

Review of the debates

Kuhn (1970d) was convinced that almost all scholars (except for Toulmin) agree revolutions are the central episodes in scientific advance. But careful identification shows that not only Toulmin apparently opposes the relevance of the concept, but many others also disagree with the essential ideas of the Kuhnian scientific revolution even though they may use the phrase “scientific revolution”.

Toulmin (1970) asks the straightforward question, “does the difference between normal science and scientific revolution hold water” (41)? He firstly questions that if scientific revolution is something like political revolution, from which Kuhn initiates the analogy, then scientific revolution is only one of degree because no political change (including those called as “revolutions”) involves an absolute and outright breach of continuity. The continuities are always as important as the changes and historians can still give rational explanations (other than the case of the incommensurable as in Kuhn). So “the term ‘revolution’ may serve as a useful descriptive *label*, but it has long since worn out its value as an explanatory *concept*” (*ibid*). Toulmin argues that Kuhn’s account of the scientific revolution went too far by implying the existence of discontinuities in scientific theory far more profound and far less explicable than any which ever in fact occur. His first point is actually that there is no such thing of incommensurable as Kuhn holds. Scientists who experienced theoretical transitions were able to say, after the event, *why*, namely for what reasons, they had changed their own personal position. But in Kuhn, that “why” is extremely bizarre; it is “incommensurable” or “world change” or “psychological”:

⁸ The title of (Weinberg, 1998).

[It is] the sort of mind-change which a man would have to describe by saying, 'I can no longer see Nature as I did before ...'—or alternatively as the outcome of 'causes' rather than 'reasons'—'Einstein was so very persuasive ...', or 'I found myself changing without knowing why ...', or 'It was as much as my job was worth ...'." (Toulmin, 1970: 44)

On the contrary, even there exist some special cases of scientific thought development involving important conceptual discontinuities, there are still good reasons for which the changes happen.

A further point of Toulmin is that it is meaningless to concede to Kuhn that any "conceptual incongruities" between the ideas of successive generations of scientists do introduce real discontinuities. Discontinuity does exist but is only a "unit of variation", which is very common in normal scientific research. So Kuhn's assertion that any conceptual incongruity is a revolution entirely demolishes his original distinction between normal science and the scientific revolutions.

Toulmin thus concludes that once people acknowledge that *no* conceptual change in science is ever absolute, they are left with only a difference in degree and the distinctive element in Kuhn's theory is thus destroyed.

Kuhn conceives that Toulmin is exceptional in his rejection of the concept of the scientific revolution. But as a matter of fact, Toulmin's above two points, particularly the opposition against the "incommensurable" thesis, are shared by many. Therefore arguably, many accept the concept of scientific revolution merely literally rather than theoretically. They have not accepted a "Kuhnian revolution" but a scientific revolution with their own understanding.

For example, Weinberg (1998) actually does not feel constrained in his use of the phrase "scientific revolution". But he emphasises that "Nowhere have I seen any signs of Kuhn's incommensurability between different paradigms" (webpage). So he also denies the phenomenon which Kuhn described as "world changes", the extension idea

of the incommensurable thesis. He gives an example: after the replacement at the beginning of the twentieth century of Newtonian mechanics by the relativistic mechanics of Einstein, students are still taught the good old Newtonian mechanics and afterwards never forget how to think in Newtonian terms, even after they learn about Einstein's theory of relativity.

In fact, the point that scientific revolution is only a matter of degree is implied in Kuhn's original argument in *The Structure of Scientific Revolutions*. Recall his argument on the invention of scientific discovery and theory (item 2.2.3). The distinction between the invention of Kuhnian scientific discovery and scientific theory is only a matter of degree. However, scientific discovery is considered as a part of normal science whilst the latter is a prelude to revolution. So when "reconstructing scientific revolutions", Hoyningen-Huene suggests that any change in paradigm is a revolution:

...normal science repeatedly produces anomalies, anomalies which compel more or less thoroughgoing revisions of its guiding regulations. These destructive-constructive episodes in scientific development are Kuhnian scientific revolutions. [Hence, r]evolutions vary substantially in their extent. ...[Only i]n greater revolutions, theories are entirely discarded and new theories take their place. (1993: 265)

From another perspective, Watkins (1970) argue that Kuhn's normal science and scientific revolution are in effect in conflict. Though seemingly with a contrary result, the essence of such arguments is the same as Toulmin's argument: logically in a post-revolution paradigm, there must be something inherited from the period of normal science. A new paradigm could never emerge from normal science as characterised by Kuhn. He firstly recapitulates Kuhn's three theses for paradigm change:

- A paradigm brooks no rivals—the paradigm-monopoly thesis.
- Scientist abandons one paradigm only to embrace a new one—the No-interregnum thesis.
- A new paradigm will be incompatible with the paradigm it supersedes—the Incompatibility thesis.

Here tentatively, Watkins considers the "incompatible thesis" is the same one as the

“incommensurable thesis” of Kuhn. As a logical sequence of these three theses, a scientist's change-over from an old paradigm to a new one must be pretty swift and decisive and this is emphatically endorsed by Kuhn:

- Like the gestalt switch, it [the paradigm replacement] must occur all at once—the Gestalt-Switch thesis.

Now Watkins focuses on the implications of the fore-going theses for the invention of a new paradigm: “what sort of pre-history could his (Kuhn's) new paradigm have?”

The answer seems inevitably: “none at all”:

Before he switched over to it (the new paradigm) his thinking was along irreconcilably different lines (by the Paradigm-Monopoly and Incompatibility theses). His switch to the new paradigm must be regarded as the very same thing as his invention of the new paradigm. (I am assuming that it was invented inside the scientific community and not imported from extra-scientific sources.) And since the switch to it was ‘relatively sudden’ the invention of it must have been relatively sudden, too. (35)

This is also endorsed by Kuhn's own statement. Therefore there is the fifth thesis:

- the *invention* of a new paradigm—the Instant-Paradigm thesis.

Such a picture appears to Watkins absurd. But if the Instant-Paradigm thesis is to be discarded, then at least one of the foregoing theses is wrong. Since the Gestalt-Switch thesis followed from first three conjunctions, then at least one of them is wrong. Now Watkins argues, that *incompatible theories should not be incommensurable*. It is like that Biblical myths and scientific theories are compatible and can peacefully co-exist just because they are incommensurable. So it is possible to keep the Incompatibility thesis without recourse to incommensurable thesis, and the paradigm changes become testable. But if so, then the paradigm-monopoly thesis and/or the No-Interregnum thesis must go. Whilst in fact, these two hang together. And the result is, the whole of the normal science thesis must be discarded.

A real exception is perhaps Lakatos (1970), who developed a different interpretation about the mechanism of science but in many places the new system essentially

supported Kuhn. His picture about the development of science is called a “*methodology of scientific research programmes*”:

All scientific research programmes may be characterized by their “*hard core*”. The negative heuristic of the programme forbids us to direct the *modus tollens* at this hard core. Instead, we must use our ingenuity to articulate or even invent “auxiliary hypotheses”, which form a *protective belt* around this core, and we must redirect the *modus tollens* to *these*. It is this protective belt of auxiliary hypotheses which has to bear the brunt of tests and get adjusted and re-adjusted, or even completely replaced, to defend the thus-hardened core. A research programme is successful if all this leads to a progressive problemshift; unsuccessful if it leads to a degenerating problemshift. (*ibid*: 133)

Such a scientific research programme is substantially identical to Kuhn's normal science, but is given a perhaps more delicate internal structure. The change of the scientific research programme, namely the shift of the hard core, is virtually Kuhnian revolution. But Lakatos makes two modifications. Firstly, the methodology of scientific research programmes is said not to support the monopoly of a research programme (a paradigm as in Kuhn's normal science). For the meantime, unlike Kuhnian socio-psychological paradigm shift, Lakatos gives an objective reason for revolution, namely to eliminate a hard core and its programme for constructing protective belts. This objective reason is provided by a candidate research programme which on the one hand is successful in the field its rival succeeded, on the other supersedes its rival by a further display of *heuristic power*. And since in Lakatos, to acquire the information of the criterion of heuristic power has to take long time (it depends on “factual novelty” and “crucial experiments”), to reject a programme is often decades later.

This argument of scientific research programmes seemingly solves the quandary, whilst preserving the essence of Kuhn's revolution approach. Scientific revolution is the state when a scientific research programme or a hard core shifts. Lakatos also apparently implies that truth is not the criterion for successful scientific knowledge. He creates another standard, heuristic power.

However, Lakatos' explanation does not really provide any further logical evidence eliminating the confusion surrounding Kuhn's normal-revolution dichotomy. That is, the places coinciding to Kuhn's ideas are still suspicious. Here the vital questions to Lakatos are, what on earth is the hard core and what is the heuristic power? Essentially, Lakatos uses a name "hard core" to refer to the substance of a "paradigm". Such a "fix" is only symbolic rather than logical—substantial. Similarly, we may generally regard any scientific change as involving an element of continuity (which then can be regarded as the part of hard core) and an element of change (which can be regarded as the part of the protective belt). But again this is equal Kuhn's idea that "any scientific change is a revolution more or less", which renders the difference between normal science and scientific revolution a matter of degree. Similarly, what is heuristic power? Does it really contain something "neutral" or "objective"? The answer is vague, if not negative. Actually it was a possibility discarded by Kuhn due to the lack of objectivity, before he went for his concept of the incommensurable (we can recall Kuhn's relevant speculation, 2.2.3). As a result, Lakatos does not offer any logical explanations which go beyond Kuhn.

From the incommensurable thesis, Kuhn eventually deduces his suspicion of the relevance of truth. Due to such a logical linkage, scholars who oppose Kuhn's incommensurable thesis also naturally oppose Kuhn's rejection of the truth. An example is Weinberg (1998). More scholars are simply obsessed by Kuhn's idea out of their common sense as scientists, since they think the task of science is to bring people closer and closer to objective truth. In this respect, Kuhn is dismissed as an irrationalist or a sceptic, relativist or most recently, "social constructivist" (Popper, 1970; Feyerabend, 1970; Lakatos, 1970; Weinberg, 1998; Franklin, 2000). Franklin (2000) looks back to the history of Galileo and points out that the question about the truthfulness of science has long been solved, but "Kuhn's 'achievement' was to put the views of Galileo's scholastic opponents back on the agenda. ...Kuhn declared logic outmoded and replaced it with history" (webpage).

Some critics try to analyse why Kuhn's mistaken ideas could appear acceptable to many rationalists (for irrationalists, it is said that the idea suspecting the truth has long been existed, whilst Kuhn only offers them a new "scientific" proof). One widely held reason is Kuhn's special rhetoric incorporating ambiguities and ploys (Feyerabend, 1970; Stove, 1982; Franklin, 2000). Some even argue that Kuhn was intentionally doing so. Another explanation is that Kuhn gave permission to anyone who wishes to comment on science to ignore completely the large pack of science not fitting his ideology, but only have recourse to the evidence beneficial to his ideas (Franklin: 2000). Weinberg (1998) notices a historical clue for understanding the formation of Kuhn's idea, which implied the same logical problem. In a communication between Weinberg and Kuhn in 1992, Kuhn explained his insight arising from the historical shift from Aristotelian to Newtonian physics—the shift from Aristotle's attempt to give systematic qualitative descriptions of everything in nature to Newton's quantitative explanations of carefully selected phenomena, such as the motion of the planets around the sun. That single spark seems to have changed the whole of Kuhn's understanding about the nature of science. Weinberg argues that for many scientists, obviously, one or two examples cannot represent the nature of science. Weinberg meanwhile emphasises that in judging the nature of scientific progress, we should look at mature scientific theories rather than theories at the moments when they are coming into being.

But obviously, complex debate never exhibits a single picture. The above review particularly reflects the aspects where Kuhn is attacked as an irrationalist. As implied in above arguments, many others agree with Kuhn and whole-heartedly accept his "irrationalism". Some even argue that Kuhn was not revolutionary/irrational enough (such as Fuller, in Franklin, 2000). Some others such as Feyerabend criticise Kuhn as irrational but agree with his incommensurable thesis. There are also some commentators who still accept Kuhn as a rationalist. For example Gutting (1980) regards Kuhn's idea as "a new approach to scientific rationality". But in terms of the connotation that Gutting understands Kuhn's "rationalism", that kind of rationalism is

rather irrational since Gutting believes that “the real significance of Kuhn’s work is that the ultimate locus of science’s rational authority is the scientific community” (1980: 11). However, Kuhn himself denies that he is an irrationalist and he is unhappy to those who agree with his “irrationalism”⁹. Once again, he feels seriously misunderstood and much of “his” irrationalism is wrongly placed on his shoulders. He complains that people persist in retrieving from his work ideas that have no place there or are actually deplored by him (1993a).

For example, Kuhn argues that he did not imply that scientists would “believe anything they please if only they will first decide what they agree about and then enforce it both on their colleagues and on nature” and “the factors which determine what they do choose to believe are fundamentally irrational, matters of accident and personal taste” (Kuhn, 1970d: 260). He did not imply that neither logic nor observation nor good reason are vital in theory-choice. Nor did he hold that whatever scientific truth may be, it is through-and-through relativistic. On the contrary, Kuhn argues that his argument of the incommensurability of theory (or paradigm) choice is only explaining the situation where the rival theories after all are not established on a same premise:

In a debate over choice of theory, [since] neither party has access to an argument which resembles a proof in logic or formal mathematics, ...the parties to the debates [have to] retrace their steps [of demonstration] one by one, checking each against prior stipulation. At the end of that process, one or the other must concede that at an isolable point in the argument he has made a mistake, violated or misapplied a previously accepted rule. ...*Only if* the two discover instead that they differ about the meaning or applicability of a stipulated rule, that their prior agreement does not provide a sufficient basis for proof, does the ensuing debate resemble what inevitably occurs in science. (Kuhn, 1970d: 260-1, emphasised by the author).

⁹ For example in a 1991 interview with John Horgan, Kuhn sadly recalled a student in the 1960s complimenting him, “Oh, thank you, Mr, Kuhn, for telling us about paradigms. Now we know about them, we can get rid of them” (from Weinberg, 1998).

Kuhn holds that there are contexts where arguments are not supported by logic but by criteria such as value judgements and hence the "case of value-conflict" can occur. Similarly, Kuhn argues that if he said that only paradigm-bonded scientific activity was valid science for its time, he was only emphasising a historical phenomenon.

But with regard to his suspicion of the truth, Kuhn reinforces his divergence from his critics and in some sense he would like to confess himself as a relativist. On the one hand he thinks it is irrelevant to assert that theory is approaching more closely to truth. He emphasises that comparison of historical theories gives no sense that their ontologies are approaching the limit of truth. On the other hand, he insists that there does not exist neutral criteria/language (out-theory criteria) for truth evaluation. In this case, "truth" may, like "proof", be a term with only intra-theoretic applications. But he emphasises that within theories, there is no problem with the rational evaluation of truth, and the unavailability of "neutral observation language" by no way damages the ability to explain scientific progress.

The unavailability of neutral language is the essence of Kuhnian incommensurable thesis. The point-by-point comparison of two successive theories demands a language into which at least the empirical consequences of both can be translated without any loss or damage. Kuhn believes that philosophers of his time have abandoned the ideal of finding such a language, but believing there is still a basic vocabulary consisting entirely of words which are attached to nature in ways that are unproblematic and to the extent necessary, independent of theory. But he himself, and Feyerabend, insist that even such a vocabulary is unavailable, because in the transition from one theory to the next, words change their meanings or conditions of applicability in subtle ways. So successive theories are incommensurable. He gives the example of the translation between two languages. Although the translation is possible, but it is a kind of compromise which alters communication. This problem cannot be solved since language cuts up the world in different ways and we have no access to a neutral sub-linguistic means of reporting.

Evaluation of the debates and further exploration

The debate seems to provide a vivid illustration of the incommensurable communication: there are said to be so many misunderstandings between Kuhn and his critics. But in any case, even for Kuhn himself as the originator of the incommensurable thesis and the “no-truth” approach, tried to persuade his critics through reasoning and evidence—this mere point seems the best symbol of his inner belief in and pursuit of successful communication and neutral criteria of truth. Otherwise, why does he bother to discuss it? What could be the reason for him hoping to assert his opinions? Actually, throughout, Kuhn was at pains to suggest that his notions are entirely rational.

Hence, it seems almost sure that there is something problematic with Kuhn's argument. But where is the substantial problem in Kuhn's argument or what is the essential reason leading the problem? The criticisms reviewed earlier seemingly only weakly probed into the substantial problem of Kuhn's argument. For example critics basically argue that the incommensurable or no-truth approach seems not to fit the actuality or rather, people's common sense suggests “we never see the condition” or “it is extremely bizarre”. But here this cannot *prove* anything¹⁰. Of course, the problem of semantics (such as the criticism of “revolution”) is also only to suggest the possibility of the logical problem, but not the logical problem itself. Alternatively critics employ limited examples: for instance Weinberg exemplifies the shift from Newtonian physics to that of Einstein. Their criticism is also insufficient because of the weakness of empirical induction. Watkins schema has a five-step logical reasoning. This kind of reasoning illustrates there is something absurd, but cannot precisely define which link is wrong. The answer does not lie within the circle of logic. In addition, Watkins'

¹⁰ Of course, “common sense” could be the unique source of some sort of true knowledge. But this has to be in the case when logic is unavailable.

formulation of Kuhn's logic does not fully fit Kuhn's ideas¹¹. Equally, the debate about Kuhn's irrationalism also looks superficial. In brief, Kuhn's opinion appears out of rational reasoning, whilst little effort really attacks the essential reasoning of Kuhn. By contrast, once again Kuhn emphasises that his ideas only apply to specific cases or contexts such as outer-theory evaluation, and insists his viewpoint is only tended to explain *some* actual phenomena. Meanwhile he actually asserts that it is in extreme sense that no neutral language/criterion is available for paradigm evaluation. The only consensus seems to be that Kuhn seems no longer apparently to emphasise the distinction between the normal science and the scientific revolution. If we accept that both sides are rational (that is, both sides believe in logic) and they are listening to each other, then this remaining divergence indicates that the dialogue has lost something essential. Therefore, this study has in some places to further the exploration with reference of the present review.

In light of this review, arguably Kuhn seems particularly caught on one point: the situation which arises when the evaluation of theory cannot be done by rationalism (but something like value-judgement). This is probably the essential element for the formation of Kuhn's incommensurable thesis and suspicion-of-truth approach. In this situation, when evaluating theories, normal rationalism cannot work because it is on some basic stipulated rule that there is divergence. Actually in this case, the Kuhnian scientific revolution, namely the kind of change with absolute discontinuity can happen. Truthfulness is not evaluated from neutral criteria. In fact, rival theories could be equally truthful. The comparison of the concerned theories is incommensurable because of some fundamental divergence in meaning (in the understanding about that stipulated principle). However, this incommensurable state is only real when people do not have access to that stipulated rule. As long as they are aware of that fundamental divergence, the connotation of all subsequent language in rival theories

¹¹ For instance, Kuhn actually points out, though loosely, that there could be paradigm candidates almost at any time.

should turn out clear, though for each one the same language could have different meaning. After all, such involved theories can only be called as incompatible but not incommensurable. The incommensurable position is a possibility when people do not know they have divergence or where their divergence lies. But theoretically they can identify their divergence through checking their steps of demonstration one by one until they find out their divergence in the kind of value-selection. After the fundamental divergence is discovered, both will be understood (so it is not the case that rival theory holders must live in different worlds). From this perspective, although the truth of rival theories is incomparable, there is still a neutral criterion to judge their truthfulness. The admission of one's right to select his value is the key to the evaluation of the truth. That is, if *only* value-judgement is the possible way to define the rule, then any value-judgement for that rule should be taken as acceptable. In other words, when people *have to* subjectively define a rule in a theory, that rule then becomes a *premise* of the theory's truthfulness. This is the metaphysical point concerning the nature of "truth". In fact, that subjective factor, or we can say irrational factor, innately grows in *any* truth and has long been recognised in philosophy. That point has normally been considered as insignificant. Human rationality actually embraces such kind of irrationality. After all, the ultimate source of knowledge is human observation and "empirical induction", which can never get thorough justification. If this is the place where Kuhn's the no-truth approach lies, then it is nothing revolutionary but only similar to platitude "we have eyes, therefore we cannot see".

As a result, the particular case which Kuhn is concerned with does exhibit the irrationality his theory suggests. But they are innate in human rationality. The key is, this element of irrationality by no means affect the rational development and evaluation of human knowledge. This is Kuhn's "intra-theory rationality", namely with the definition of fundamental irrational rule, the development and evaluation of human knowledge is rational. Unfortunately, when seeing the term "intra-theory", people will naturally regard the "theory" as the most general sense of "theory", and

therefore find Kuhn's theory unacceptable. On the other hand, even in this particular case, Kuhn's incommensurable thesis is not for certain tenable. The incommensurable state is only a possibility when people are not aware of the existence of the divergence and where the divergence lies. When they know it, the problem of communication will be solved *though the divergence persists reasonably*. The real trouble is rather that people may not be able to realise the existence of the divergence. More difficult is to find out where the divergence lies. Meanwhile, actually not just in case of the value-conflict element, any divergence in process of demonstration may produce the incommensurable situation. Since in an extreme sense, people cannot thoroughly eliminate the existence of divergent understanding of the same concept, Kuhn is right to philosophically suggest that there could never be a neutral language and people have to always make compromises. But what is involved in a truth evaluation is often only some limited knowledge. So in practice objective evaluation of theories is feasible.

The exploration into the specific condition with which Kuhn is concerned has resulted in a universal implication, since after all, all human knowledge involves human-defined premises. At least, it has to be determined if human observation and reasoning is trustable. So above understanding about the truth, the evaluation of the truth and the incommensurable thesis apply to a universal situation. The question whether there is absolute discontinuity between two theories in a scientific revolution also turns out to be clear. Of course, there could be the scientific revolution like the outright breach. For example if the change happens in the first premise of the theory (Descartes claims that a real seeker after truth has to at least once suspect everything). But even in this circumstance there seems not necessarily the incommensurable. For, even in this kind of revolution, good communication is still possible as long as the change is fully understood. Furthermore, if only this kind of theory change is called scientific revolution, then perhaps there are only very rare revolutions in the history of science. That is, if the change is not in the first premise, then any theory change can be called as *intra-theory* change in the sense that the first premise is inherited. We must now be

aware that there are many *scientific revolutions* belonging to this sort, and in this sense, there is no absolute difference between normal science and scientific revolution.

Here a reason leading to the misunderstandings between critics and Kuhn as well as Kuhn's lack of clarity is highlighted, that is the meaning-shift in narration or thinking, the situation so-called as the incommensurability by Kuhn and Feyerabend. This kind of meaning-shift, though obviously it can be identified as we show here, is often unconscious in the debates previously reviewed. This seems an extremely popular reason (not merely in this occasion) for the misunderstandings between critics and Kuhn, the confusion caused by Kuhn, and the inadequate criticisms by the commentators. People actually always try to use their own common sense understanding of a term (here is the "scientific revolution") to change Kuhn's specific conceptualisation of the term. But at the same time, Kuhn seemingly never apparently distinguishes the meaning of a term in his dictionary from the common sense meaning of the phrase. Nobody even bothers to point out that, "scientific revolution" is a totally loose concept. Arguably, it is exactly because Kuhn still uses the term in a layman's sense that he misleads people to conceive that his theory, peculiarly his "discovery" of the irrational factor in science, is applicable to the generality of science. So this ambiguity seems the very reason for Kuhn's unstinting prestige, because Kuhn is best renowned for his radical sceptical conclusions about the nature of science (see Gelder, 1996; Javaid, 1997; Weinberg, 1998). Another outstanding and important condition of this kind of ambiguity is with the term "theory" or "theory change/substitution". In practice, perhaps both can be defined infinitely. A theory may be used to title knowledge epistemologically complex or very simple. So theory change/substitution could be due to the development in an intermediate level idea or the first premise. As long as the first premise is not changed, this is perhaps the normal situation, theory change is never a shift that traditional element has been totally abandoned. When the change occurs from the first premise, theory substitution is a thorough breach from tradition. Remember that theory is the term most often employed to replace the word paradigm. In between Kuhn's argument and various scholars' debate, at one time, one

is actually using one sense of theory change. But he can understand both senses, so there is always a feeling that some things seem right, but others less right.

So when Kuhn puts forward the idea that “rival paradigms must be incompatible, otherwise there is no need of a new paradigm since the old paradigm will eventually articulate the anomaly”, it may sound acceptable. But such a view is actually based on the sense that paradigm change is from the first premise, which is actually rare. And if only this is a paradigm shift, then there are only a few paradigm shifts in science. So the idea that paradigms must be incompatible seems to make little sense.

To conclude, when value-judgement has to be involved, which is inevitable for any knowledge, we find the situation which fits Kuhn's opinion of irrationality. In this case truth is in a particular state. But this situation does not really distort the rationale of rationalism. Despite this, good communication is still possible. But the key is to be aware that there is divergence and the divergence has to be identified, even though this could be very difficult. So the incommensurable state is a factual problem people could often encounter. Meanwhile there could be the kind of scientific revolution of an outright breach when the change happens with the first premise, which is similar to a subjective factor. We have also concluded that the factual incommensurability in Kuhn and critics' argument is a key reason leading to the misunderstanding between Kuhn and others, the misunderstanding of Kuhn's argument and the inefficiency of the criticisms. Then, since only in a very particular state that both sides in a theory change are completely incompatible whilst the normal science, the common case of which is theory substitution, is defined as involving two incompatible paradigms, it becomes suspect that such “normal science” is really normal. But if the paradigm shift does not certainly bring about incompatible theories, then this further endorses the viewpoint that the differentiation between the normal science and the scientific revolution is only a matter of degree.

2.4 Conclusion

In this chapter, Kuhn's original argument regarding the paradigm was firstly explored. Then a review of the debates about Kuhn's ideas, highlighting the vagueness and confusion in the paradigm thesis, whilst the subsequent criticism or development was inadequate to eliminate the suspicion, was explored. Since Kuhnian paradigm thesis incorporates some fundamental problems (such as the problematic definition of the core concept) and so the remedy demanded has to be fundamental, the thesis is committed to a re-constructing of the paradigm thesis based on the implications achieved above.

As to the implications achieved above, it is generally accepted that there is a general frame in science, where scientists have to locate themselves. This "something" is Kuhn's "paradigm". Yet no consensus is reached on what a paradigm is. Nor is it agreed what is the role and position of a paradigm in science. In the present confusing recognition, the understanding of the paradigm includes the idea of successful scientific achievement, a theory, or a variety of commitments to a scientific discipline. The divergence regarding the fundamental concept actually intervenes throughout people's understanding and hence debates on the normal science and the scientific revolution.

Due to the acceptance of the existence of the "something" (paradigm), the normal science is also admitted. The normal science is the state which exists when scientists stay within the paradigm. It is agreed that other than being committed to the puzzle-solving activity, the prime responsibility of scientists is to break through the paradigm. But Kuhn tries to emphasise that it is an alternative for a scientist to stay in the state of the normal science, namely not break through the paradigm. But this state is seen by many as the business of a secondary scientist. However, a question is, if the primary duty of a paradigm is to destroy itself, then what is the essential significance of the

paradigm as well as of the normal science?

Moving to Kuhn's scientific revolution, it is basically agreed that the difference between the normal science and the scientific revolution is only a matter of degree. That is, the scientific revolution is not an outright breach. There is always something inherited, which means what is happening is an intra-paradigm change¹², namely a change of the normal science. But looking back to the consensus concerning the normal science in the discussion above, the basic agreement is that the normal science *should* always break through the paradigms, otherwise it is the work of secondary scientists. Then if scientific revolution *is* essentially the same as the normal science since it is not the kind of change of paradigm shift, then does scientific revolution become the work of secondary scientists? Therefore the consensus about the scientific revolution is in some sense conflicting to the consensus about the normal science. What is going wrong?

In terms of the ideas like the "incommensurable" (the essential concept of Kuhnian revolution) and the suspicion towards the truth, Kuhn and his critics do not achieve agreement. But analysis illustrates that the attack by the critics is insufficient. Kuhn insists that his approach does fit some occasions. We particularly probed into the situation which Kuhn is concerned with, and concluded that there are some irrational factors innate to human knowledge. In this sense, Kuhn is right to suggest that there is the possibility that a paradigm shift or scientific progress might not get close to truth. But that element of irrationality has long been recognised and does not affect the rational evaluation on human knowledge based on the element. On the other hand, the incommensurability approach is not correct despite its existence in a practical sense. Successful communication or evaluation of ideas could be reached as long as the divergence is precisely identified. But in practice, it is not always easy to recognise the

¹² Actually, this implication depends on the understanding that two paradigms must be incompatible, in one knowledge community, there is only one paradigm, and this paradigm changes when a scientific revolution happens.

divergence in the demonstration steps, which opens the door of the incommensurable. This analysis meanwhile casts light in the fact that the practical incommensurability is a key reason producing the confused understanding of Kuhnian paradigm thesis, in Kuhn's misleading of his readers, and in the inefficiency of the criticisms of Kuhn's paradigm thesis. It is evident that there is much unconscious meaning-shift in the construction communication of the paradigm thesis.

Due to the insufficiency with both the fundamental concept and every vital aspect, from the overall perspective, the Kuhnian paradigm thesis now appears fragmented. In this case it seems necessary for a new theorisation as the best way to re-integrate the theory with its original merits, excluding all confusing factors. This will be the focus of the next chapter.

Chapter 3: A Re-conceptualisation of the Paradigm

3.1 Introduction

After addressing the inadequacy of Kuhnian paradigm thesis and the insufficiency of various scholars' later correction or articulation, this chapter will elucidate a new theorisation of the paradigm. It is, after all still a *paradigm* thesis, because the essence of Kuhn's conceptualisation of the paradigm is corroborated but on a more solid base.

Theorisation is generally based on inspiration, though it requires logical reasoning. There was the process of originating, comprehending, evaluating and comparing the possible concept candidates of the paradigm based on the implications from the previous chapter. But this is not included in this chapter because, such a narrative will appear too trivial or over-complicated. Furthermore, the process of generating the new concept is not significant for the concept's evaluation. What we will do in this chapter is to develop the new theorisation of the paradigm, which will stand for itself. For from the elucidation of the theory, in the first place, we will be able to judge whether the new concept defines something truthful. In the second place, in light of the implications from the previous chapter, we will be able to judge whether the new theory does inherit the merits of existing ideas or is able to interpret the facts old ideas

tried to explain. And, finally, we can judge whether all the problems in existing arguments are successfully solved by the new theory.

3.2 The re-conceptualisation of the paradigm

The paradigm is recurrent truthful knowledge in thinking. We use the most general word “knowledge”, which covers any kind of human intellectual product. Hence a principle, a method, a theory or even a thinking habit etc all could be a paradigm. “Truthful” has two senses. First, there is the kind of truthfulness found in axioms, facts, or value-judgements. That is, in the context where *no deductive logic is available or workable*, an axiom, a fact or a value-judgement, which is actually the *unfalsifiable* result of perception or observation, is recognised as true. For example, the logic of deduction is a truth of such nature. As mentioned earlier, this type of knowledge, which is generally called “basic knowledge” in this thesis, is the ultimate source of all human knowledge. Secondly, another sense of truthfulness is that a piece of knowledge can be logically verified as coherent with its premise, whilst its premise is true. Obviously, the truthfulness in this sense can be eventually traced back to the first type of truth. This type of knowledge is generally called “complex knowledge” in this thesis since it has premises. “Recurrent” means primarily matters relating to old knowledge. But what essential is that, *when an old idea appears in someone’s mind consciously or unconsciously, the thinker is actually trying to employ this idea as a premise in some sense to develop new knowledge.*

Since paradigms are truths, so they should be reserved rather than broken for the suitable context. And in the suitable context, paradigms should always work. In fact, the suitable context is rather a part of the truthfulness of a paradigm, namely a part of the premises of a truth; so the appropriate context cannot be separated from the understanding of a paradigm.

Obviously, truthful complex knowledge is developed on the basis of paradigms. So the paradigm-based knowledge development is obviously a major mechanism producing new true knowledge. If such paradigm-based knowledge is the so-called normal science, then *normal science is a main content of scientific research rather than a job of the secondary scientists*. The other content is the observation or pure inspiration, the element out of human intuition. Such element is the entire source of basic knowledge and also contributes to the production of complex knowledge.

Some knowledge may recur more frequently than other, and some is shared by many whilst other seems not. So it seems that some paradigms are more often or more widely held. But such conditions are not substantial for the definition of the paradigm. Paradigms, as they are true, should work in appropriate contexts. The frequent recurrence of a paradigm is only an indicator that some issue gets more attention, either by an individual or by a group, and that issue embraces the context of the paradigm. Or the paradigm actually has a very universal context, so it should work in many occasions. These reasons are all out of the nature of the paradigm. That a paradigm is predominantly shared by many or recurs more frequently may have some sociological relevance. For example, it indicates the significance of a paradigm, because it seems to explain something which gets concentrated attention. Secondly, the truthfulness of such a paradigm seems widely accepted. But this phenomenon actually could be a disguise of a problematic paradigm. In any case, they do not change the nature of these paradigms as recurrent truthful knowledge. In fact, any paradigm is almost surely shared by many even there is not a visible community, because a same question will be asked by many.

But the real point concerning the mechanism of the paradigm is that, any recurrent knowledge in human mind is *de facto* paradigms. That is, all recurrent old knowledge

in thinking is in the first place conceived as true and prepared to premise other knowledge. There may be some confusing cases. For example, people may intentionally illustrate an old error in argument. But in this case, the error is rather used as a fact. Or some people may be conceived to intentionally reject a truth whilst employ an error. But that error in their mind is actually a truth. In short, everybody uses old knowledge because it has been accepted as truth. Due to this, we can expand the concept of the paradigm to a broader sense, namely; *any recurrent knowledge is a paradigm. The paradigm thesis is to interpret everything relating to employing old knowledge. This reveals the central issue concerning the paradigm thesis; namely a paradigm could actually be an error.* The recurrent knowledge in thinking is often mistaken as true. So the dialectic of the paradigm is that, in its original nature, paradigms are true and therefore should be kept and premise the development of new truths. And the normal science in this sense is totally acceptable. But in practice, paradigms could be pseudo. In this context, and only in this context, paradigms should be broken. So the issue of paradigm-breaking is the issue of identifying and abandoning the wrong paradigms.

So actually, the concept of paradigm touches one of the two basic forms of human thinking, the process leading to complex knowledge. Complex knowledge is established upon old notion, theory, material, method etc. So if we are developing complex knowledge, old knowledge, tradition, creates exactly the frame within which we are imprisoned. Such normal science is a main content of all thinking behaviour. Another is not “revolution”, but the innate human intuition such as pure inspiration and observation. Besides the innate intuition, it is the existing knowledge that tells us what we know as well as *what we will know*. We can go a further step from Kuhn to claim that all intellectual achievements, as long as they are of the nature of complex knowledge, are puzzle-solutions. Even those most esoteric elements in human mind such as creation or the usually called inspiration are overwhelmingly paradigms. For

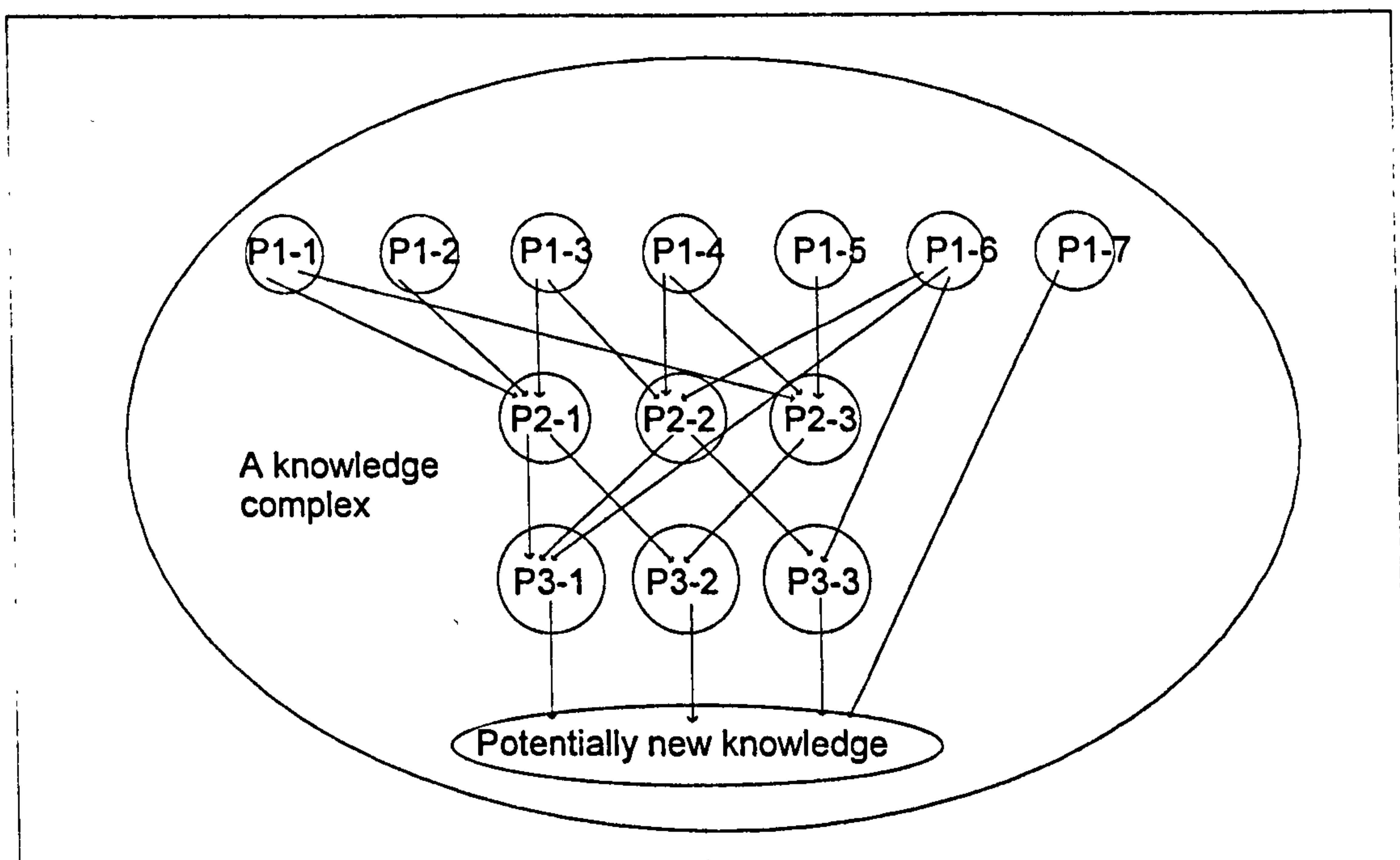
example, creation is nothing mysterious but the power to connect, analogise and apply (extrapolate), which are all matters which can be learnt namely paradigm-derived. If we take any innovative intellectual product which is of the nature of the complex knowledge, the most thorough unscrambling reveals that it has been anticipated by some paradigm. *For developing the truthful complex knowledge, it is not a question of using or not using paradigms, but of using appropriate paradigms.* Perhaps in most cases, the reason underlying any erroneous complex knowledge should be after all ascribed to the problematic paradigm employment.

Nevertheless, for any paradigm, its very existence is a sign that there is some reason, though this could be wrong, supporting its existence or its truthfulness. Therefore, the identification of a problematic paradigm could be extremely difficult. This factor and the principle that the truthful paradigm should be kept, together leads to the existence of problematic paradigms even in academic circles. So it is not the case that all paradigms are waiting for breaking through, which however is agreed by Kuhn as well as his critics. Nor can we go out from any paradigm as long as we want, which is conceived by many of Kuhn's critics. It is also not the case that it is completely impossible to rationally evaluate an individual paradigm as Kuhn holds. The rationale for the identification of a problematic paradigm is clear. Our discussion in the next section will expand on these points.

3.3 The identification of problematic paradigms

To identify problematic paradigms, one has to identify paradigms in the thinking process and then evaluate them. There is potential difficulty in this process, but the rationale is clear. Here we firstly model the process of knowledge accumulation.

Figure 3 A schematic diagram modelling the mechanism of knowledge accumulation



The diagram models the mechanism of knowledge accumulation. Each ring represents an item of knowledge. There is firstly the basic knowledge ($P1-n$, namely $P1-1$, $P1-2$, ...), which is derived from pure human inspiration or observation and in practice, it seems mainly inclusive of the axioms, facts or pure value judgements. For example, some basic logic, such as induction or deduction, belongs to this sort of knowledge. The interaction among $P1-n$ then produces $P2-n$ knowledge. For example, with national urban population in a year series (say, $P1-1$) and basic quantitative analysis method ($P1-2$), it would be possible to come up with the trajectory of urban population growth in the country in a particular year series ($P2-2$). Clearly, the $P2-n$ series of knowledge is established on the premise of $P1-n$. If there is problem with $P1-n$ (e.g.

the data on urban population is discovered to be flawed), then the credibility of *P2-n* is damaged. The understanding of *P2-n* should simultaneously take into account the corresponding *P1-n* knowledge. But in practice, the *P2-n* knowledge is often applied without the reference to its *P1-n* base.

Furthermore, based on *P2-n* knowledge, *P3-n* knowledge could be developed. This time, some *P1-n* knowledge can also help to construct *P3-n*. For example, with the trajectory of urban population growth in a country in a particular year series (*P2-2*) and the logic of empirical induction (*P1-6*) and the evidence that the country is representative of all countries (*P2-1*), it is possible to discover a universal law of the trajectory of urbanisation (*P3-1*). Clearly, the credibility of *P3-n* is based on the relevant *P2-n* and *P1-n*, but the application of *P3-n* is normally without reference to its *P2-n* or *P1-n* bases.

Such a process is obviously a basic form from which knowledge develops. When we meet a piece of *P3-n* knowledge, although perhaps unconscious, in logic we are simultaneously meeting its corresponding *P2-n* and *P1-n* bases, and after all, *P1-n* base since *P2-n* is based on its *P1-n* base. So when *P3-n* knowledge is a paradigm, its underlying *P2-n* and *P1-n* knowledge are all paradigms. Besides, due to such a process of knowledge development, it seems appropriate to regard *P1-n*, *P2-n*, *P3-n* ... as in a kind of logical hierarchy with the basic knowledge (*P1-n*) at the lowest level, though practical stratification may not be in such a clean and clear manner. Knowledge at the higher level obviously has more fruitful/complicated connotation. It is composed by lower level of knowledge. Conversely, any more complex knowledge can be interpreted as less complex knowledge until it becomes basic knowledge. After stratified development, a set of paradigms, which are coherent in many places, constitute a specific knowledge community. Obviously, a “scientific discipline” is exactly such a knowledge community. For such a knowledge community, the ultimate

source is still the primitive basic knowledge ($P1-n$ as in Figure 3).

With reference to this mechanism by which the knowledge develops, now we speculate on the rationale and challenge facing the identification of problematic paradigms. The first step is to identify the existence of paradigms. But in many situations paradigms could be ignored. One essential reason could be that, at one time, there are many paradigms in the thinking process as in Figure 3. In this case, some of them may be missed. In particular, paradigms in such forms seem easily ignored: a logic style, a thinking habit or a piece of common sense. Secondly, there could be some paradigms which have long been taken for granted and the researcher never considers the necessity of examining them, such as some tradition rooted in a research community, a society or a culture. This also *de facto* leads to the ignorance of some paradigms. Thirdly and most importantly, the premise paradigms behind complex knowledge (e.g. in Figure 3, $P1-1$, $P1-2$, $P2-2$ and $P1-6$, which are premising $P3-1$) are easily missed, whilst in fact, the premise paradigms are a part of the thinking process. When employing the complex paradigm, people may only pay attention to the final outcome and ignore the whole connotation. Or since it is normally the subsequent developed knowledge that is particularly relevant to the contemporary issues a discipline hopes to address, for both the practitioners in the field and external observers, typically the latest development of a knowledge community is often misconceived as the whole of the community (like $P3-n$ in Figure 3). The origin ($P1-n$ and $P2-n$) is often forgot. This is often unavoidable, because since research aims to make progress on the basis of existing knowledge, it seems impossible for a researcher to always trace back to the very first principle.

Any omission of paradigms may lead to the omission of problematic paradigms. In particular we may have identified some problematic paradigms but missed their premises, which are actually where the fundamental problem lies. In this case, the

problem of the knowledge community cannot be really solved, because the premise paradigm is still working. The dilemma is that, to accept a complex idea normally simultaneously implies the need to accept all of its premises. But to reject this idea does not mean to reject its premises. Even problematic paradigms at a fundamental level are identified but their subsequent paradigm is missed, the remaining subsequent paradigm could still work. In fact, in practical knowledge community, the relationship between paradigms is often less clear as illustrated in Figure 3. The reason is obvious: the relationships between causes and outcomes are not necessarily linear and straightforward. This is like the relation between “chicken and egg”: when a knowledge community is formed, its ingredient knowledge may then become mutually supportive. The result then is similarly that, the remaining problematic paradigm will continue to damage the credibility of the whole knowledge community.

To avoid the missing of paradigms, one has to try to identify and include all paradigms under the light of evaluation. An important method helping achieve this is to dissect the knowledge. Knowledge, if it is complex knowledge, is composed by premise knowledge through a stratified logical process. So knowledge dissection will provide greater opportunity to gain access to the underlying paradigms.

Knowledge dissection is also the basic method of paradigm evaluation, the second step of identifying the problematic paradigms. The evaluation of any knowledge is actually to make judgement in reference to valid criterion. The criterion needs to be knowledge that has been known to be true (otherwise the evaluation is ineffective and the Kuhnian “incommensurable” occurs). So paradigm evaluation is mainly the process of searching the criterion. Since knowledge is either basic knowledge or complex knowledge, which *after all* is composed by premises at the basic knowledge level, all knowledge can eventually be traced back, step by step, to its premise basic knowledge (the basic knowledge is naturally in this state). Until then, the knowledge should have

been able to find a decent criterion for knowledge evaluation because the basic knowledge has been the ultimate knowledge. In such a case, the paradigm evaluation is basically rational. But if the criterion knowledge has not been available until the basic knowledge level, then the final judgement has to be made on the basis of the seemingly irrational factors: the unjustifiable human inspiration or intuition. But as has been suggested earlier, in this context this is inevitable and such irrationality is effectively an innate part of human rationality.

As a converse process of knowledge development, knowledge dissection should also normally result in a discovery of a paradigm hierarchy. But a key difficulty to dissect complex knowledge is that, although in Figure 3 we see a clear structure of the knowledge community and can easily understand how to dissect it, there does not seem to be the clear logic in practice for dissecting complex knowledge. That is, for example, if *P3-1* is firstly recognised, there is not clear logic or method to let us know that *P2-1*, *P2-2* and *P1-6* are the premises, although after we have been aware of the latter paradigms, we should be able to judge the logical relationship between them and the former. This difficulty of knowledge dissection can be conversely proved by the process of knowledge development. Although we know all knowledge grows from *P1-n*, we do not always know the exact logic by which an item of *P2-n* is produced, though we may be able to justify the relation between the former and the latter after they are laid out. So although perhaps all are aware of sufficient *P1-n*, only rarely are we able to acquaint significant *P2-n* and perhaps even more rarely can we discover significant *P3-n* ... This means that although we all know many facts, only a minority can result in significant generalisation. Therefore, for the process of knowledge development, and similarly for the process of knowledge dissection which actually is not in absolute distinction from the former, methodology or logic only provides part of the knowledge in need. It still needs relevant inspiration.

Apart from this, theoretically, there could be various constitutions of premises for an item of complex knowledge (such as the *P3-1*). That is, dissection of *P3-1* does not necessarily result in the discovery of *P2-1* or *P2-2* or *P1-6*, for there are probably other routines by which *P3-1* can be achieved. This does not affect the evaluation of the truthfulness of *P3-1*, for any of the premise constitution can provide the access to the criterion for judgement-making until the basic knowledge. But if knowledge dissection is hoped to discover the underlying paradigms in a particular context, normally only one particular premise constitutions would meet the requirement because the actual formation of the knowledge community may have followed one logical line. In this case, even one has been able to carry out a dissection of a knowledge community, further work is in need to justify the relevance of the underlying paradigms in the particular context. This obviously adds the difficulty of a successful knowledge dissection.

But on the other hand, the availability of various routines for the justification of complex knowledge is also an advantage for identifying the problematic paradigms. It provides the possibly easier ways of evaluating the truthfulness of complex knowledge than the original logic by which the knowledge is produced. This may help reduce the unnecessary hard work of paradigm identification, because basically, only when the most developed knowledge, for example *P3-1* in Figure 3, of a knowledge community is found problematic, there is the need of checking the paradigms backward in the community. But the process of judging whether *P3-1* is problematic is exactly a process of knowledge dissection. So if there is only one choice of knowledge dissection following the original logic by which the knowledge community is formed, then to evaluate *P3-1* will be the same process of unscrambling the whole knowledge community. Such a process could be sophisticated which in the case of Figure 3 involve almost all paradigms in the community, and the worst is that, after such a sophisticated process to evaluate *P3-1*, *P3-1* may finally be found right. But now since

there is other routine available, one may be able to make a judgement of the truthfulness of *P3-1* more easily, and then decide if he should go on to examine the premises of *P3-1* in the actual knowledge community. In this case, the negative evaluation of *P3-1* will be an indicator that there could be some problematic or wrongly applied paradigm beyond *P3-1* in the knowledge community. The alternative routines to evaluate complex knowledge vary. For example, to evaluate an induction theory, one often does not need to examine all the original evidence, but simply check the validity of the theory in a single case. But if this proves that the theory is problematic, then there will be the need to trace back the original premises, including logic, of the theory. For the fault could be due to the problem of some of its original evidence. And if the theory is in a knowledge community, then that evidence may still be taken as paradigms and work in some occasions. In short, following the line of knowledge dissection, paradigm examination will be a gradually deepening process if at the beginning the paradigm is found problematic; and at every step of this process, there will be the need of testing the middle-achievement. Such a test is on the one hand to examine whether the new-discovered knowledge is a part, paradigm, of the knowledge community. On the other, if the first answer is positive, then there should be another test to judge if the new-discovered paradigm is problematic. This seeks to understand if this paradigm could be part of the reason underlying the problematic of the knowledge community and hence if there is the need of further dissecting this paradigm.

As a result, the above argumentation elucidates the potential difficulties as well as the rationale of identification of problematic paradigms. The central issue concerning the paradigm thesis is to follow the rationale, while overcoming the difficulties, to filter out the problematic paradigms in thinking behaviour. The core strategy is knowledge dissection.

In fact, Kuhn's vision, henceforth today's general vision, of paradigm is focused upon one particular type of paradigm, the paradigm of a coherent knowledge system, or of a group of systematic knowledge, which has strong heuristic power and sets a fundamental change in ideas. The previous argument has analysed the essential coherence of this sort of paradigm within the general concept of the paradigm. But for Kuhn, since he was not aware of the nature of paradigm, his elucidation of the paradigm is somewhat superficial and phenomenological. Thus, the concept of the paradigm, inherited from Kuhn's vision, becomes a symbol capable of describing "important" knowledge and knowledge change, but impotent of substantial interpretative function, in which the original reason for this concept to become popular lies. It is only used to inform some knowledge or some change of knowledge (when the term "paradigm shift" is used) which is important. This is actually a good result. According to the previous analyses, if Kuhnian paradigm is used for substantial explanation, it would be misleading and erroneous, or incompatible in many places such as his "no-truth" thesis and "incommensurable" thesis.

An example of such a devaluation and innate contradiction of the concept of the paradigm in the literature is Taylor's reference to this concept in his analysis of the development of planning theories (1998; 1999). Taylor did not take into account the later development of Kuhnian paradigm (which is reviewed in the third section of Chapter 2), but clung to Kuhn's 1962 perspectives. So the conflict or incompatibility of the concept of the paradigm is even more apparent. His reference to the paradigm is only in relation to a major or fundamental change in planning theory that could fit Kuhnian paradigm shift. But, "major" or "fundamental" change essentially depends on value-judgement. In fact, Taylor tried to find more solid lines between Kuhnian paradigm shift and the looser paradigm shift, but again this resulted in some

ambiguous conclusion¹³. So Taylor seemed to be aware that there is only unessential difference between “fundamental” change of thought and “significant” changes in town planning thought, and hence it is only looser or more generous to call all important development in planning theory as “paradigm shifts”. Otherwise, only the change from modernism to postmodernism can be “significant” enough to be titled as a paradigm shift. But even this, when Taylor had recourse to more criterion of Kuhnian paradigm shift, was suggested as unable to represent a paradigm shift. There is not the kind of change as Kuhn describes as “incommensurable change” or change of the whole world view, nor is there a thorough replacement of one theory by another. So his analysis suggests “no paradigm shifts”: “they are better reviewed as significant developments which have ‘filled out’ and enriched the rather primitive town planning theory which existed half a century ago” (1999: 327). Taylor has not been able to go a further step to speculate that it is in which sense that Kuhn’s examples of paradigm shift can really fit Kuhn’s own criterion. He also failed to think through that if there is never a paradigm shift in planning theory, are scholars just doing normal science under a same paradigm, the converse of the paradigm shift in Kuhn’s thinking? If this is the case, what is this paradigm? Furthermore, why do not scholars (or are scholars so incompetent) break the paradigm, which should be the real significant pursuit of any research in Kuhn as well as his critics’ thinking? These questions will imply not only the insufficiency of the Kuhnian paradigm thesis, but also the possibility of a more vigorous interpretation of evolution of planning theory if there is an appropriate concept of the paradigm.

These inadequacies not only reflect the problem of Kuhn’s idea, specifically in relation to the concept of the paradigm and paradigm shift, and the heuristic power of the paradigm, but also demonstrate the weakness of Taylor’s work. Taylor’s work is

¹³ For example he stated that fundamental change should not happen too often, say, decades. But the change of planning theory he reviewed is only fifty years. He also pointed out that Kuhnian argumentation is in terms of science, and planning theory seems not a science.

not sufficiently penetrative. What is the real significance of a paradigm approach towards the evolution of planning theory? This is missed. This is a weakness of Taylor's work, while it is also well described in Kuhn's theory. It is the Kuhnian "normal science". Taylor's reference to the concept of the paradigm is simply matching facts to the conceptual frame set by the paradigm (here the paradigm is "the concept of the paradigm") designer. The more essential issues here, for example whether the paradigm is valid and significant, are neglected. Normal science is strongly criticised by Popper and others (see 2.3.2), in sense that it is not innovative and sticking to orthodoxy. But Popper and others do not see another side of "normal science", that truth should be inherited and insisted. Nor do Kuhn and his defenders see this point. Taylor only mechanically carried out a form of research activity. The more substantial elements are forgotten, and this is arguably the real reason leading Taylor's research, as well as Kuhn's notion of the paradigm, to be superficial and irrelevant.

Therefore, the re-conceptualisation is an effort to recover the relevance of the concept of the paradigm by refining its nature. The key issue with the paradigm is highlighted, which is the identification of problematic paradigms. The whole elucidation demonstrates that the paradigm is a concept capable of interpreting the dialectic of tradition or the mechanism of knowledge development. It is relevant to any knowledge or the behaviour of thinking. Kuhn notices the significance of the paradigm, but only partially because he misses the perhaps most important character of the paradigm, truthfulness. He also notices the possible complexity of paradigm identification and evaluation. But he mistakes these particularities as the general. He is unable to see the nature underlying the phenomena. Instead, he mistakes the complex performance of the paradigm (the case of the paradigm has not been well identified and evaluated) as the nature of the paradigm, although he himself does point out that his paradigm is about an extreme case. Kuhn himself has not been able to coherently be aware of the

scope of the paradigms he refers to. By contrast, some of Kuhn's critics just deny the significance of the paradigm completely. They also ignore the potential difficulty of paradigm identification and evaluation.

That there is something, which is more complicated than a theory, controlling the thinking of scientists, seems a puzzle in existing ideas of the paradigm. But according to the new theory, this is simply an exhibition of the sophisticated paradigm communities or the types of paradigms which normally get less attention. Therefore, paradigm is not as vague and mysterious as some conceive. Any complicated or mysterious vision of a paradigm can be interpreted by the new concept. For example, Kuhn emphasises the paradigm of the exemplar or the scientific achievement. But the condition represented by an exemplar or a scientific achievement is rather the attachments of the exemplar or the achievement, and hence some principles, ideas, logic, and methods etc, are employed as paradigms. Of course, in a knowledge community, many principles, ideas, logic and methods basically work together, producing some complicated effects. This is the case of paradigm community. But such a community, no matter how complicated it will be, should be still interpretable as the theory of the paradigm suggests.

It may be exactly because that debaters all go after the "science", that their capability of making judgement out of common sense is lost. For example, obviously "truthfulness" is a starting point of the idea of the paradigm, which Kuhn, as well as his critics, totally ignores. The paradigm is essentially an element existing in human thinking. It is not exclusively a phenomenon in science or pure science as Kuhn implies. Rather than by recourse to the history of science, the fact that we are all human beings, and thinking as a human being has gifted each individual sufficient material to speculate the paradigm thesis (this seems close to what Shapere (1980) argues). In fact, it might be a dangerous tendency to separate scientific thinking from

common thinking behaviour.

3.4 Conclusion

The paradigm thesis is primarily about tradition. It is about how tradition shapes the progress of knowledge in human thinking (and not exclusively science). The paradigm, the element of tradition, is simply a true conception of old knowledge. “True” or “truth” refers to not only the kind found in complex knowledge, when it can be logically verified as coherent with its premise, whilst the premise is true; but also the kind found in basic knowledge, which is out of pure intuition or observation and cannot be rationally justified. The latter is essentially the innate property of any truth. But since generally all old knowledge in thinking is *de facto* accepted as truth, in a broad sense, any old knowledge in thinking is paradigmatic. So paradigms actually are the basic elements in human thinking. Since knowledge is either basic knowledge or complex knowledge, and complex knowledge must be, after all, composed by basic knowledge, any paradigm can be eventually dissected as basic knowledge. So no matter how different paradigms may look, they have the same origin. And as basic knowledge is accessible by common sense, any paradigm, no matter how esoteric it may look like, can be finally understood and evaluated. Moreover, since truthful knowledge should be kept and work in its context, the condition that a paradigm may appear more frequently than other is not a feature of different nature. It only in a sense indicates that the context of the paradigm recurs more frequently, and this may sociologically manifest the fashionability of the particular context.

The above characteristics of the paradigm are basically stated in terms of *an idea*, as a paradigm, in the sense that a single logical structure could be within the idea. One more important character of the paradigm is that, since knowledge develops through the accumulation of paradigms, the relevant paradigms will eventually construct

knowledge communities. The process of the formation of a knowledge community is basically a stratified logical development, and the structure is relatively concise. But when a knowledge community is formed and many paradigms have been there and are still growing, the structure of the aggregation will be complicated, because all paradigms will be in an entangled systematic manner. The logical direction may become mixed because the difference between cause and conclusion is not really absolute.

These features of the paradigm determine the rationale to deal with the central issue concerning the paradigm. This issue is that, paradigms could be problematic, so there is always the task of identifying the problematic paradigm. The basic and ultimate rationale to complete this task is knowledge dissection, which could reveal all potential paradigms, inclusive of the “underlying” paradigms, and get access to the necessary criterion for knowledge evaluation. Since the inner structure of complex knowledge is in nature a premise hierarchy, the dissection of a paradigm is basically a stratified process and the outcome could be a hierarchy constituted by premise paradigms.

However, although the rationale of identifying problematic paradigms is clear, its application in practice could be extremely difficult. Such difficulty, along with the reason that dialectically true paradigms should be kept, contributes to the phenomenon that sometimes paradigms may appear to reject any impact. The difficulty in identifying problematic paradigms involves, on the one hand, paradigms may simply be ignored. What is vital, in a knowledge community, the omission of any one paradigm may seriously damage the credibility of the whole community, because this paradigm will continue to work as a premise in thinking, and the whole community is systematically involved. On the other hand, there is actually no unique logic for knowledge dissection. Inspiration, other than method, is often the main factor in such a

process. To disentangle the state of systematic involvement of paradigms in a knowledge community could be troublesome. Meanwhile, dissection of a paradigm may result in various outcomes, since there could be many routines leading to one conclusion. Therefore, in the deepening process of knowledge dissection, there is normally the need of evaluating the relevance of the middle achievement at every step. A successful paradigm evaluation will have to overcome these potential troubles.

Proceeding to the scientific community (this term is rather sociologically oriented), or the knowledge community of Chinese urbanisation research, when the research focus shifted from the consideration of the strategy for Chinese urbanisation to the research behaviour itself, the preliminary hypothesis was that there seemed some “traditions” which constraint scholars’ view. This brought about the reference to Kuhn’s concept of the paradigm, a concept embodying similar connotation with the phenomenon observed in Chinese urbanisation research. The theory provides a platform for thinking over the factors with universal relevance. The development of such an examination eventually leads to the need for deconstruction and reconstruction of the theory, because as seen in the previous two chapters, existing theory only grasps some particularity rather than the general, the phenomena rather than the nature. As a result, in the preliminary scrutiny, the theory can only successfully “match” the phenomena observed in Chinese urbanisation research, but not solve the problem. It is “match” rather than “explain” because the core understanding of the paradigm mechanism in Kuhn is actually wrong, so the explanation provided by the old theory is erroneous.

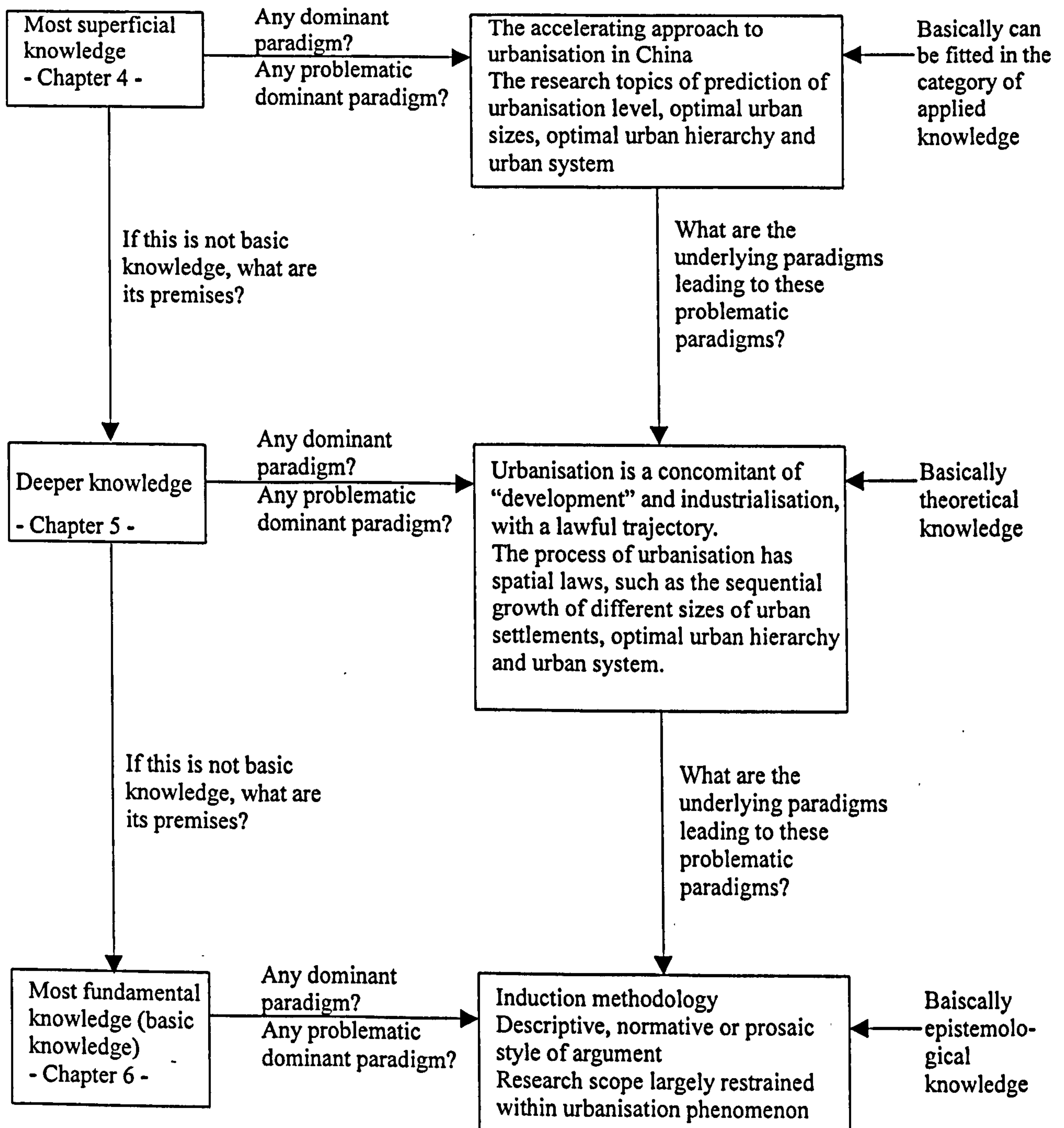
Based on the new theory of the paradigm, it is conjectured that there is some problematic paradigm. Such a hypothesis seems reasonable, for according to the theory, problematic traditions could well be inherited and works as a premise underpinning knowledge “development” (the development then has to be equally problematic). One may ignore examining traditions, or may fail to effectively examine

traditions because of the existence of many difficulties. Among the difficulties, a core reason is the systematic involvement of paradigms in a knowledge community. With the consciousness of the rationale of paradigm identification/evaluation, the thesis will try to test and prove the above conjecture through identifying the problematic paradigms in Chinese urbanisation research. This process, as the theory suggests, will be a stratified process of knowledge dissection. The result could be a discovery of a paradigm hierarchy, an achievement leading to the break-through of the systematic involvement of paradigms within a knowledge community, the very core of the reason shielding the existence of problematic paradigms. In the gradually deepening investigation, the middle achievement at each step should also get evaluated so as to determine its relevance. As a result, a three-step process of paradigm identification and evaluation will be used, which eventually touches the paradigms at the basic knowledge level. This is the content of the next three chapters. Of course, the research is in some sense highly structured and abstract. It tries to reflect some essence of the reality, and hence will dismiss the less essential factors of the reality. So that eventually three levels of paradigms are uncovered is in a sense a symbolised explanation of the knowledge body of Chinese urbanisation research. The evaluation of these paradigms and the logical coherence among them will demonstrate their relevance and interpretative capability.

Meanwhile, that there are eventually three levels of hierarchical investigation is not pre-designed, but a result of deepening exploration. Discovery necessitates the need of further investigation. As the theory of the paradigm informs, the discovery of problematic paradigms that are not at the basic knowledge level often implies the existence of problematic paradigms at a deeper level, which will then trigger further investigation if a researcher commits himself to a study as in-depth as possible. Such a logic development will be analysed in the Introductions and Conclusions of the next three chapters. But to give a more integrated picture of the hierarchical exploration

into Chinese urbanisation research, a flow diagram (Figure 4) illustrating the logical development and the to-be-revealed three levels of paradigms of Chinese urbanisation research in the following three chapters, has been produced.

Figure 4 An hierarchical exploration of paradigms in Chinese urbanisation research



**PART III EXPLORING PROBLEMATIC PARADIGMS OF
CHINESE URBANISATION RESEARCH**

Chapter 4: The First Level: Accelerating Urbanisation Approach and Favoured Research Topics

4.1 Introduction

The introduction to this chapter is not only applicable to Chapter 4 but also the next two chapters, as they all serve one objective —— identifying the problematic paradigms in Chinese urbanisation research —— and essentially have the same structure. The difference is that the problematic paradigms uncovered in the three chapters are different. The central line leading the three chapters is the stratified, deepening process of knowledge dissection in the field of Chinese urbanisation research. As pointed out in the theory of the paradigm, advancement in knowledge dissection or paradigm investigation, from one level of paradigms to a deeper level of paradigms, accounts for not just method or logic, but also inspiration. This could be a process difficult to explain. But when there has been the discovery, it should be able to get valid evaluation. This is also the strategy adopted in the next three chapters: there will be no analysis concerning how the paradigms in one chapter lead to the discovery of their premise paradigms. Rather, the conclusion of paradigms at each level will be given straightforwardly, and then there will be a discussion concerning the relevance of paradigms at a deeper level to ones previously discussed. In short, the next three

chapters will put forward the conclusion of a paradigm hierarchy in Chinese urbanisation research straightaway, and then this will be followed by an evaluation of the extent to which the paradigms are relevant, dominant and problematic.

The study is about paradigms in Chinese urbanisation research. So the evaluation will firstly relates to the category of Chinese urbanisation research. As introduced in Chapter 1, in a strict methodological sense, this category is the two hundred and eighteen papers picked out from basically all issues of two leading journals relating to Chinese urbanisation research, *Jingji dili* and *Chengshi guihua*. The criterion of selection is that the paper addresses or is directly relevant to the topic of Chinese urbanisation and its studies. Both original studies and review or report articles are covered, which is a broader definition than traditionally pure academic research work, because the latter is a good source to reflect the general or mainstream situation of academics (though the personal stance of the writer affects the objectiveness of any article). Including all relevant papers in all issues of two leading journals is hoped to guarantee the objectivity of the outcome of the investigation as representative, because in sense of a “body” of papers, its completeness is kept. Otherwise, except that the research tries to cover all available literature, which is obviously an over-huge task, any criterion for the selection of papers appears to be more like “creating” a group of works than collecting a part from a homogeneous whole. However, as contributors for *Jingji dili* and *Chengshi guihua* are overwhelmingly geographers and urban planners, the result of this study actually has strong representation from these two groups, and the interpretation of the findings should take this into account.

In short, the identification of the problematic dominant paradigms in Chinese urbanisation research is substantially based upon the analysis of the two hundred and eighteen papers. Other recent papers or books on Chinese urbanisation are also reviewed, though this is based more on availability and should not be seen as being representative or comprehensive. In the thesis, these works are regarded only as examples rather than “samples”.

In practice, the evaluation includes two steps: justification of both the existence and dominance of critical paradigms and an evaluation of the extent to which these paradigms are problematic. The first stage involves empirical analysis of the two hundred and eighteen papers, whilst the second stage focuses on a specific assessment to illustrate the problematic nature of the paradigms. Because the examined paradigms are shared by a considerable number of scholars, this helps to illustrate the significance and relevance. Once the paradigms have been identified, their evaluation has recourse to the analysis of logic and evidence of the relevant paradigm knowledge. The evaluation of the existence and dominance is through a literature review, analysing the distribution of the examined paradigms. Hence, the research involves an evaluation of all the sample papers. A systematic coding framework was designed to clarify each article based on the key features. Whilst it is unnecessary and not feasible in this thesis to describe in detail the characteristics of each case, the key technical points relating to the contents of the coding system, namely criterion used for appraising and classifying the paper (see for example 99-100, 125-126, 161-162), some examples indicating the application of the coding system (see for example 96-98, 128-142), and the result out of this evaluation process, such as the distribution of different ideas (see for example 98, 100-101, 162), are elaborated in the following chapters. Generally, the design and application of the coding system comprises two integrated steps that cannot be separated. First there was a general review of the entire collection of sample papers. This resulted in some initial conjecture regarding some common features. This conjecture was then developed as a series of hypotheses guiding the more detailed survey of the literature. This involved a process of applying the initial classification as well as justifying them. Through this re-evaluation, the initial classification become reviewed and refined through a process of iteration. The final coding system comprises five perspectives (Table 1). Each perspective has a certain number of dimensions associated with it, and these will be analysed in more detail in the following three chapters. Each article was categorised against these perspectives with the variety of dimensions (an example is included in the Appendix 2).

Table 1 Perspectives and dimensions used in the coding system for sample evaluation

Perspectives	Number of dimensions	Chapters
Attitudes towards the accelerating urbanisation approach	4	Chp. 4
Research topics	12	
Underlying theoretical commitments	3	Chp. 5
Basic research methodology	4	Chp. 6
Research scope	2	

The method for the second step, the evaluation of the extent to which the paradigms are problematic, depends on the nature of every specific paradigm. So this has to be analysed in concrete context. After all, it should not be forgotten that taken together, these three chapters ensure that the process of paradigm identification and evaluation is deepened and forms an integrated process of paradigm evaluation (i.e. a fundamental paradigm's problematic can partly explain that the paradigm established on its base is also problematic).

In this chapter, as the paradigm investigation into Chinese urbanisation research begins, the “superficial” dominant paradigms are identified. These are part of the knowledge that is most easily observed in the present argument relating to Chinese urbanisation, which are basically at the applied level, namely the knowledge directing the practice in research and reality. One is a viewpoint, which holds that China is or has been stepping into the stage of accelerating urbanisation (the growth of the level of urbanisation is accelerating). This viewpoint is later termed the “accelerating urbanisation approach”. Another is the scholars' preference to some particular research topics. There are three favoured research topics. One is related to the overall macro trajectory (particularly the urban population growth trajectory) of urbanisation in China. The second concerns optimal urban size and urban hierarchy. The third concerns the urban system, which holds that different urban settlements in a region should be integrated into a system through function division and infrastructure networks. We are now moving to evaluate these paradigms.

4.2 Are the accelerating urbanisation approach and several research topics dominant?

These are basically two types of paradigms. So evaluation will basically follow two separate lines and this section and next section will be divided into two sub-sections.

4.2.1 The accelerating urbanisation approach

Firstly some examples of the argument suggesting the accelerating urbanisation approach are illustrated. The review begins from the perspective of the national authority in China, which is principally identical to the mainstream academic consensus especially under the institution where planning still plays a decisive role. In 1998, a symposium chaired by the Ministry of Construction of China (the main department responsible for planning and regulating Chinese urbanisation) reached agreement that there is a “new tendency of Chinese urbanisation... China is entering the period of speeding up urbanisation” (*City Planning Review Correspondent*, 1998a: 4). It predicts that the scale of urbanisation in China could reach 35% in 2000 and 45% in 2010. The base level in 1996 was 29.4% (based on the criterion that “urban population” refers to “city and town population”). Under the auspices of the Ministry of Construction, a strategic research project was completed, which was concerned with the prospect of Chinese urbanisation. It was called the *Strategy for Urban Development in China in New Century*. Basically, a core commitment of this project was the accelerating urbanisation tendency (Project Panel 1997; Gu *et al*, 1999). In the Preface (Gu *et al*, 1999), in the name of the vice-Minister of Construction of China stated, “China is moving into the stage of accelerating urbanisation” (1). Researchers seemed convinced that

Following the establishment of market-based economic system, the attenuation of the constraint on migration by the Household Registration system, and the vast quantity of rural surplus population swarming into cities, Chinese urbanisation process will inevitably enter into a speeding-up development period in the future. This will lead to more designated cities. Chinese urban system will step into a new era. The functions of cities will be more various. Urban networks will become more sophisticated. Economic linkages among cities will be tighter. (Gu *et al*, 1999: 23)

It is reported that the Ministry of Construction plans, by 2010, there will be about 1,000 designated cities and 20,000 to 25000 towns, and urban population will increase by 4-5% annually and reach about 600 million (Xu *et al*, 1999; in 1998 there are 668 designated cities, 19060 towns and 379 million urban population according to CSY, 1999).

Such attitude of the official authority coincides with the academic consensus.

According to the academic literature, “how to accelerate Chinese urbanisation as early as possible and keep the growth of urbanisation level compatible with the growth of economy is the first question to be answered” (Zhong, X., 2000). Hence, the Chinese rural industrialisation process which has operated for over decade, originally praised as a success, is now being criticised. For the critics, that pattern, often described as “leaving the farmland without leaving the countryside, entering factory without entering cities”, apparently violates the tendency of accelerating urbanisation (Hu, 1998; 2000; Zhong, X., 2000). Hence policies promoting this kind of development model are also considered inappropriate.

From the attitudes advocated in the sample papers towards the accelerating urbanisation approach, the extent to which this viewpoint is dominant in Chinese urbanisation research can be evaluated. Not every paper relates to this approach, so the evaluation has to eventually be drawn among papers touching on this proposition. These papers total seventy-six, 35% of the total sample. This proportion of papers indicates the popularity of the accelerating urbanisation approach. More importantly, many of these papers, sixty papers (79% of the seventy-six papers) accept the idea that

China is experiencing or beginning to experience accelerating growth in urbanisation (Table 2). Only sixteen hold a negative or neutral stance. The comparison of these two numbers manifests overwhelming support of the viewpoint.

Table 2 Summary of approaches towards the accelerating urbanisation approach in the two hundred and eighteen papers

Support or accept	1977-89	10
	1990-2000	50
	Total (t1)	60
Reject or suspect	1981-89	4
	1990-2000	12
	Total (t2)	16
t1+t2		76
Papers not touching on this approach		142

The entire issues in the two sample journals cover basically the last two decades. The present study is hoped to reflect the latest situation whenever possible, so among the seventy-six papers, the situations in two decades (before 1990 and since 1990) are compared. Sixty-two were published between 1990 - 2000 (48% of the total sample papers published in the same period), in contrast to fourteen published before 1990 (16% of the total sample papers published in the same period). Among the sixty-two papers, fifty hold a positive stance comparing to twelve negative or neutral. Such a comparison suggests that the dominance of the accelerating urbanisation approach is basically a recent event. This conclusion is endorsed by the more random review on works from other resources of thirty-seven relevant works published since 1996. Among them sixteen papers relate to the accelerating urbanisation approach, whilst fourteen (38% of the totality) are supportive.

To conclude, the above examples and evaluation demonstrate the existence and considerable dominance, especially in the more recent period, of the paradigm that China is moving into, or has been in, the stage of accelerating urbanisation. The next section will move to examine of the dominance of another paradigm, namely that there are several research topics which have “favoured” status.

4.2.2 Favoured research topics

To demonstrate the existence of particular dominant research subjects, the distribution of research subjects in the sample papers is evaluated. As a first step, there should be a classification criterion. The analysis shows that there are basically twelve types of research topic:

1. *Monitoring and prediction of urbanisation level growth: studying the definition of urban population and the theory and method relating to the prediction of urbanisation level*
2. *Optimal urban sizes and urban hierarchy: studying the optimal size of urban settlements and the optimal hierarchy of different sizes of urban settlements*
3. *Urban system: studying the optimal grouping (particularly functionally) of different urban settlements within a defined region (actually “urban system” often involves the issue of “urban hierarchy”, a part of 2. But there is much research relating only to urban hierarchy but not other aspects of urban system.)*
4. *Economic factors and urbanisation: studying the correlation between urbanisation and economic factors*
5. *Migration factors and urbanisation: studying the relation between urbanisation and migration including relevant parameters such as cultural background, migration expectations etc*
6. *Ecology, resources and urbanisation: studying the influences of urbanisation on natural environment and resources or the vice versa*
7. *Designation of “City”: studying the designation of City level of government, which will affect the “urban areas” included in statistics*
8. *Regional differentiation of urbanisation: studying the regional disparity of urbanisation*
9. *Sub-urbanisation: studying the phenomenon of sub-urbanisation*
10. *Urban-rural coordination: studying a potentially alternative spatial pattern that*

surpasses the spatial urban-rural dichotomy and combines the advantages of both the urban and the rural

The other two research topics are: synthesising discussion on Chinese urbanisation or the review of relevant research, and papers with themes other than Chinese urbanisation, but directly relevant to it such as analyses of urban planning. It seems that both of these two types of papers are not suitable to be included in the analysis of the distribution of research themes. They are included as a part of the sample papers because they involve the application or discussion of the knowledge relating to Chinese urbanisation, and are hence useful in general evaluation of the situation of Chinese urbanisation research. Only papers with identifiable specialised research topics are compared to evaluate the research topic distribution in Chinese urbanisation research. The situation is summarised in Table 3:

Table 3 **Distribution of research topics**

	Research topic	Sum	Papers published before 1990	Papers published since 1990
1	Monitoring and prediction of urbanisation level growth	25	13	12
2	Optimal urban sizes and urban hierarchy	29	16	13
3	Urban system	32	14	18
4	Economic factors and urbanisation	20	4	16
5	Migration factors and urbanisation	11	3	8
6	Ecology, resources and urbanisation	6	1	5
7	Designation of "City"	3	0	3
8	Regional differentiation of urbanisation	1	1	0
9	Sub-urbanisation	2	0	2
10	Urban-rural coordination	3	1	2
	Total	132	53	79

The above table indicates that of the one hundred and thirty-two papers with an identifiable specialised research topic, three research topics are most favoured: monitoring and prediction of the growth of urbanisation level, optimal urban size and urban hierarchy, and the urban system. These three topics account for two thirds of the one hundred and thirty-two papers. A fourth favoured research subject is the relationship between economic factors and urbanisation. This topic actually could be

further divided into three subtopics (see the below Table 4), and from the subdivision, a fourth popular research topic, on the macro-economic features and urbanisation, can be identified.

Table 4 Subtopics in papers on economic factors and urbanisation

Research subtopic	Sum	Papers published before 1990	Papers published since 1990
Macro-economic features and urbanisation	17	4	13
Foreign direct investment and urbanisation	1	0	1
Township and village enterprises and urbanisation	2	0	2

Comparing the topic distribution before 1990 and after 1990, the quantity of research focusing on the three most favoured topics shows no great change. But the fourth favoured topic seems a topic of recent interest. Furthermore, research into the minor topics also saw an increase in interest in recent decade. As a whole, the dominance of the three topics is particularly prominent before 1990, whilst thereafter this seems changing (particularly with the growth of a new perspective topic), but is still apparent.

The existence of dominant research topics is reflected in the interest of the central government. For example, the government pays particular attention to optimal sizes of urban settlements. It is believed that the national government's principle for urbanisation regulation is urban size oriented (Zhou, Y., *et al*, 1988; Wang, H., 1999). "Urban size has been always employed as the core measurement in both the strategic and tactical governance of urbanisation process" (Wang, H., 1999: 36). There is a national "guideline" for urbanisation that is to strictly control the growth of the size of large cities, and actively promote the development of medium-sized cities and small cities. This is addressed in the National Urban Planning Act of 1990. But the core element of this guideline has been formed for several decades. According to the literature (Zhao, 1984; Cao, 1984; Zhou, Y., 1993), in 1955 the then National Construction Committee formally put forward the principle later enacted in legislation

that

We should not establish too many large cities... In the future, the new-building cities should be small cities and industry towns in principle, though this does not exclude the construction of medium-sized cities in those genuinely gifted places. Without particular reasons, we should not build any new large cities. (Cao, 1984: 14)

In the Third National Urban Construction Conference, 1978, the guideline to control the size growth of large cities and build more small cities and towns was confirmed. In the National City Planning Conference of 1980, this guideline was developed into the principles, to control the size growth of large cities, reasonably develop the medium-sized cities, and actively promote the development of small cities, which was later approved by the National Council. Then it entered the Planning Act of 1990. In short, this policy development manifests the influence of the size consideration to national policy-makers.

As a conclusion, the above analysis suggests that there is a kind of favouritism of some particular research focuses in the field of Chinese urbanisation research. Such favouritism illustrates a habit in practitioners' thinking. The frequently studied research problems are the monitoring and prediction of urbanisation level, optimal urban sizes and urban hierarchy, urban system and the relationship between macro economic features and urbanisation.

4.3 The problematic nature of the accelerating urbanisation approach and favoured research topics

In the previous section the dominance of the accelerating urbanisation approach and the commitment to some particular research topics was examined. The following two sections will evaluate whether the two paradigms are problematic.

4.3.1 Is there an accelerating urbanisation in current China?

Weakness of present definition of urban population

A starting point to evaluate the hypothesis of the accelerating tendency for Chinese urbanisation is the factual evidence of the process itself. But “a major difficulty confronting any study of urbanisation is the definition of what constitutes urbanness” (Kirkby 1985: 54). This seems particularly true with the study of Chinese urbanisation since there have been several explicit or implicit shifts of criteria for the definition of both the urban and urban population. The application of the criteria also varies in practice. These all potentially lead to the incompatibility of the data. Meanwhile, so far no criterion for the statistics of urban population seems well satisfied. Thus the available statistics of urban population are criticised as either over- or under-estimates (Hu, 1983; Kirkby, 1985; Zhou, Y., 1986; Xu, 1997; Zhang, W., *et al*, 1997; Shen, 1997). It is not necessary to trace back all these criticisms in detail, only the present potential inaccuracy or inconsistency in the definition/statistics of urban population will be discussed.

Currently Chinese official statistics equates a “city and town population” to urban population, a criterion employed since the 1990 census. The city and town population refers to the residents registered in city district or residential committee or street in designated city or town (Shen, 1997). Compared to some indicators, this criterion

eliminates most of the confusion. For example, the earliest definition particularly paid attention to classifying the non-agricultural population from the agricultural population, and basically the non-agricultural population would be accounted as urban population though the factor of location was also considered. But in practice, more and more inhabitants with agricultural status have become involved in non-agricultural activity and taken up residence in city or town. So non-agricultural population in city and town is arguably under-estimated (Hu, 1983; Kirkby, 1985; Zhou, Y., 1986). There was another “city and town population” criterion, which was used in 1982 census and some years thereafter. This definition basically follows the “location principle”, namely counts in all population in city and town regardless of the non-agricultural status of population, particularly in towns. Of central concern is that much of the urban-managed area is actually not urban. City and town normally manage rural area much larger than themselves. So the 1982 city and town population is mainly criticised as being over-estimated (Kirkby, 1985; Zhou, Y., 1986). Thus, the new city and town population definition is an improvement on both of these, not only abandoning non-agricultural and agricultural classification, but also adopting a more appropriate territorial definition.

Nonetheless, there are still at least two elements not well reconciled within the current “city and town population” definition. Firstly, there have been changes or vagueness with the criteria for the designation of city or town or city district within a city, and even with similar criterion, its application in reality can also be flexible (Kirkby, 1985; Zhou, Y., 1986; Peng, Q., 1990; Zhang, G., 1994; Gu *et al*, 1999). This brings the question which criteria are acceptable. More importantly, the urban population in different times and places could be effectively incomparable. For example, a case study about Guangxi suggests that during the Eighth Five-year Plan (1990-1995) period, the expansion of city boundaries provided the main contribution to the increase of urbanisation level in this province (Wang, Y. M., 1997). Kirkby estimates that after 1978, the majority of the urban population growth in China can be explained by the new designation of urban settlements or the broadening of urban borders (1994). Of

course, of central concern here should not be whether the border can be expanded or new town or new city can be established, but rather whether the expansion or establishment is in the place fitting the criteria of urban and whether the criteria are persistent.

Second, current criteria of urban population are still based on permanent residents. That is, in a city, officially only the household-registered inhabitants will be calculated as urban population. But besides the permanent residents in most urban places, there are large number of a temporary and floating population. Temporary residents refer to individuals that have continued to live in a place other than their household registered location for a relatively long time, whilst the floating residents refer to those living in a place other than their household registered place for a period shorter than the temporary residents. Despite the difference in the location of household registration, temporary urban residents are just like permanent residents in terms of their needs for work, education, and utilisation of the infrastructure that the urban centres provide. Thus in general, scholars accept that the temporary residents should be regarded as urban population (see for example Xu, 1997; Zhang, W., *et al*, 1997; Shen, 1997). Obviously, if temporary population is originally urban population, this factor will not affect the total of Chinese urban population. But in fact, it seems that the majority of urban temporary population is the registered rural population. The establishment of a market-based economy has pushed the demographic flow, and this in turn has produced large quantities of temporary and floating population. Though seemingly this has not been examined, this same reason also produces the possibility of overestimation of urbanisation population since a city or a town may export many permanent residents as temporary residents in other places. In practice, although national statistics of the temporary residents are still not available, based on some relevant case studies, it is suggested that currently, urban population could be bolstered by 20% by their temporary residents (see for example Gu *et al*, 1999; Zhao, Y., 2000). In Suzhou City region, according to the statistics in one county city Kunshan, which consists of 21 towns, temporary residents equal about 15% of permanent residents

(based on the data from Kunshan Construction Committee, 2000)¹⁴. In Suzhou City, which is a large city, its temporary residents add some 10% (75, 000 individuals) to the number of permanent residents (based on the data from Public Security Bureau of Suzhou City, 2000).

Due to these two flaws, the 1990 city and town population under the criteria presently used, can not really represent urban population even though it is probably the best indicator available. If the evaluation of the urbanisation trajectory is based on the city and town population criteria, the results will be accordingly inaccurate. However, there is a possibility in which the problem of the urban population definition can be eliminated. That is, the purpose of the research is only to understand the trend of urbanisation in China to see whether the hypothesis of the speeding up tendency can be verified in terms of the available experience. So in essence, it is to calculate the trend of the growth of urbanisation level, rather than the actual urbanisation level. In this case, if accurate criteria of urban population is not available, a compatible criteria will suffice. For example, if urban population based on criteria of city and town population equates to a certain ratio of real urban population, then the trajectory of city and town population equates to the real trajectory of urban population. Further, even if the compatible criteria are not available either, if the available data exhibit a consistent error in terms of the ideal ones, general trend may be still possible to get. For example, suppose that the urban population based on the criteria of city and town population occupies a part of the real urban population, and the ratio follows a stabilised decreasing trend. In this case, the sort of result that the trajectory of city and town population is speeding up will be applicable to the urban population. This is because when a smaller and smaller part of a whole is growing, then the whole must be

¹⁴ This is calculated based on the demographic data from *Kunshan Small Towns Survey* (Kunshan Construction Committee, January 2000). In the Survey, "town population" embraces five items: non-agricultural population, agricultural population, population from outside, temporary population and floating population. The complicated criterion, particularly related to the last three items, confused local authorities in charge of individual statistics. Therefore in the documents many towns only reported one or two of them. In this case, in our calculation, the gross town population equates to the sum of all individual items. The temporary population is chosen as the bigger item between "population from outside" and "temporary population". Then the proportion of this gross temporary population in the gross town population is 14.6%.

growing at an even greater speed. Hence, as an alternative to the unavailability of valid data of urban population, we can try to examine if the available data, city and town population, are valid in trend analysis. From the above analysis, compared to current criteria of urban population, the true urban population should exclude the *inconsistent* designation of urban areas and include the temporary urban residents. So the next section will evaluate how the actual inconsistent designation of urban area and the exclusion of temporary residents affects the adherence of the city and town population to the true urban population. Obviously, there could never be a hundred percent unarguable demarcation between the urban and the rural, or the urban population and the rural population. People actually accept the right definition of urban population with reasonable approximation in practice. Our examination will also inevitably involve such approximation.

How does the inconsistent designation of urban area and the exclusion of temporary urban residents affect the adherence of the city and town population to the true urban population

First we have a look at the factor of inconsistent designation of urban areas. Of course not all the designation of new city or town or city district or residential committee is problematic. The urban is defined in terms of settlements satisfying certain conditions such as the population scale within a certain area. In the process of a settlement being included in the urban statistics, theoretically there is inevitably a moment that the increase of one single inhabitant will result in all population in this settlement eligible to be counted as urban population. This does possibly lead to a leap in urbanisation levels, and this leap might be regarded as not being associated with an essential underlying change. But obviously, the leap of urbanisation level due to such urban boundary change is reasonable and does not produce any inconsistent comparison of urbanisation trend. In statistics, there has to be an arbitrarily defined marginal point for a settlement to finish the transition from the rural to the urban.

Arguably the problem with urban designation is mainly the inconsistency in terms of what kinds of settlements are admitted as urban. Such inconsistency could be both horizontal, between different regions, and vertical, through time. The horizontal inconsistency of urban designation is actually a vital problem specific for the comparative studies on urbanisation among different countries. Unfortunately although this is noticed and precaution are taken, perhaps largely because there is no other choice, many general implications about urbanisation from large scale of comparative studies are still based on such loose foundation (see for example HABITAT, 1996). It seems that such a flaw is regarded as tolerable though in some circumstances it may not be. But for the present research, given that China has been basically issuing the same regulations throughout the country and the application should also be similar, we mainly examine whether there is vertical inconsistency of urban designation in China. And if not, what influence has been exerted on the urbanisation trend evident from official statistics in comparison to the actual trend. Two factors need to be investigated: the criteria of urban and their application.

Gu *et al* (1999) trace the evolution of national criterion for urban designation. The first ruling, *Provision on City and Town Designation*, was enacted in 1955. In 1962 and 1963, there were successively two new regulations about city and town designation, which actually increased the requirements for a settlement to achieve the status of city or town compared to the 1955 standard. Not only did this affect the designation of new urban settlements, but some of the existing cities were also deprived of city status. As a result, during 1958 to 1965, there were 52 newly designated cities, but among these, 32 were later deprived of their city status in the same period. In addition, in 1957 there were 176 cities, 29 of them later losing city status. Though the discussion of Gu *et al* does not touch the position of designated towns, many had their town designation cancelled during the period. There was an adjustment of town designation requirement in 1964, which largely lifted the previous criterion (CSY, 1999). The next and the last big adjustment was in the middle of the 1980s. In 1984, there was a new provision for town designation, which in general considerably increased the possibility for an

original rural settlement to achieve a town status (detail can be seen from CSY, 1999: 128). In 1986, the State Council enacted a new provision for city and town designation, which greatly relaxed the requirements for city designation. For example, the population threshold was decreased from non-agricultural population of 100,000 down to 60,000 (Gu *et al*, 1999). C. Fan finds that since the mid-1980s, there had been several relaxations of the standard for city designation (1998).

In brief, two adjustments of the regulation for city and town designation had the following effects: the early 1960s adjustment considerably tightened the criteria, and hence should have actually led to a devaluation of the urbanisation level until the next adjustment in comparison to the data from roughly 1955 to 1963; the mid-1980s adjustment considerably relaxed the criteria, and hence should have actually led to overestimation of the urbanisation level in comparison to earlier (roughly 1964 to 1983) data. Since the writer has not been able to get the detail of the 1955 provision, he cannot compare the present criteria with the 1955 base criteria.

Despite the change of official regulation, the irregular application of official criteria may lead to *de facto* an under- or overestimate of urbanisation level. In this respect, although overall evidence is lacking, case studies and general observation generally imply that the local practice has the inclination to further amplify the tendency which the official adjustment favours. That is, when the official criteria tend to tighten the requirement for urban designation, the practical application will often follow an even more tightened requirement (like most of the time during 1960s and 1970s). When the official criteria tends to loosen the requirement for urban designation, the practical application will often follow an even more related requirement (like 1980s and 1990s). For the early 1960s to about the end 1970s when the adjustment of urban designation criteria was to tighten up the requirement, Kirkby (1985) shows that in reality, to get a town title was more difficult than just satisfying the national regulation. For example, the then town regulations stipulated a minimum population of 3,000, of which 70% should be non-agricultural. But one settlement in Hebei province had a total

population of almost 11,000, with a non-agricultural ratio of around 70 per cent but was not designated as a town. Kirkby noted that in fact, some provinces interpreted the town size rules as they wished, many applying a minimum standard of 10,000, half at least of which must be non-agricultural. C. Fan (1998) observed that since 1980, basically a local authority was eager to strive for the status of a city as long as this was a possibility (which implies the actual condition cannot meet the national requirement for city designation). This should be also seen as *part* of the reason for the previously mentioned research conclusion of Kirkby (1994) and Y. M. Wang (1997), that the majority of the urban population growth in recent two decades was due to the new designation of urban settlements or the broadening of urban borders. A detail in the designation of town in Suzhou City region seems also relevant to illustrate the subjective irregular operation in designating towns (Table 5). The table shows that in three years (1992-1994), 91 townships were almost all lifted to the town status. This seems unable to be explained as normal development in accordance to national criteria of town designation. Rather, it reflects irregular government activity.

Table 5 Numbers of “Towns” and “Townships” in six county cities in Suzhou City region*

Year	Towns	Townships	Total
1991	65	91	156
1992	82	73	155
1993	119	31	150
1994	142	3	145
1995	145	0	145
1996-1998	146	0	146

* Source of preliminary data: Suzhou Construction Committee: Suzhou City Construction Yearbook 1991 to 1998.

In short, the irregular application of the official standard for city and town designation should have amplified the effect that the adjustment of national regulation produces. The early 1960s to 1970s statistics are underestimated compared to the data before that period, and the 1980s to 1990s statistics are overestimated compared to the 1960s to 1970s data.

Turning to an evaluation of how the exclusion of temporary urban population in present statistical criterion affects the trend analysis of urbanisation. Little research seems to address the overall evolution of temporary population in Chinese urban area for past five decades. But from general observation of the development in new China, it appears, beyond doubt, that only after the adoption of the open door policy around 1980, that the existence of temporary urban residents has gradually become significant. In the period before 1980, the early 1950s is a time difficult to evaluate since at that time, the household registration system had not been adopted. The adoption of the household registration system began in 1955. This system is not just to record the population and the settlements of population, but generally accepted as seeking to isolate the urban area from rural area and hence reduce demographic flow or immigration. Associated with this intention of demographic management is the reinforcement of planning based economy and elimination of market based economic behaviour. All of these (which can be seen in lots of research on Chinese household registration system or relating to Chinese urbanisation and society in that period, such as Kirkby, 1985; Chan, 1994; Wan, 1999) restrained the occurrence of temporary urban population from both the regulation and the underlying causes. So until about 1980, there should be only relatively small amount of temporary urban population. As side evidence, in earlier study about urbanisation in China and particularly the definition of urban population, there is basically no mention of the temporary population issue (see for example Kirkby, 1985; Zhou, Y., 1986). Thus, basically the statistics of urban population before 1980 was not affected by the exclusion of temporary urban population.

Since 1980, China has gradually adopted a market based economic development strategy. Associated with this there are many institutional and policy reforms. Naturally, there has been more demographic flow. Since the household registration system remains, people working in the urban area other than their registered settlements for relatively long time become temporary urban residents. Observed from the history of economic reform in China in recent two decades, it seems reasonable to

extrapolate that the temporary urban population has undergone a process of gradual increase in the early 1980s to rapid increase from the mid-1980s until perhaps the early 1990s, and more recently, stabilised or even reduced slightly. The reason is, the reform has basically adopted a moderate and progressive strategy. This is reflected in changes in the demographic flow. Meanwhile, the beginning of reform was rural centred (including towns). It was aimed at new development opportunities in rural areas. These two factors determined that the occurrence of temporary urban residents should be moderate in the early 1980s. Into the mid-1980s, when the enthusiasm of people was ignited, reform in the urban sectors formally started, and relevant policies were also stipulated (one such is the 1984 No.1 Document of the central government which related the rules on entry to the towns). This accelerated the growth of temporary urban population. Indeed, the beginning of economic reform (both rural and urban) was almost certain to result in a real liberation of productivity restrained for a long time by the Cultural Revolution. This liberation created more opportunities. A feature of modern society is the boom in the secondary and tertiary sectors, which are centred in urban areas, the new opportunities were largely located in urban centre. Therefore it is reasonable that such a period saw quick growth of temporary urban population. But the situation is changing. As the economy becomes mature, it may follow the path of a modern economy. This seems the case for China in the 1990s. As an indicator, from the beginning or at least the mid-1990s, the potential of rapid employment growth, which is mainly in urban, seems to have declined. Indeed, urban unemployment has become a more and more serious issue. This has been widely reported. This seems a factor that will damage people's anticipation for a migration from rural to urban, and hence the potential of the growth of temporary urban residents. Of course, the socio-economic change is multi-dimensional and the growth of temporary urban population is affected by many factors. The stagnation of the growth of urban employment opportunities seems to be a negative factor. There might be other positive factors. But in general, the effect of the economic reform on temporary urban residents seems to have been weakening. In fact, it seems very often that it is at the beginning of the introduction of a new factor (such as economic reform), that its effect is strongest.

Empirical studies on temporary urban population do seem to suggest that its growth is slowing down entering the 1990s. Due to the lack of official statistics, all research is based on either the rectification of similar data or the conclusions from case studies. There is one item in national statistics, which is actually the total (urban plus rural) temporary population namely the “Population with residence registered in other township, town or subdistrict, but having actually resided in this enumeration area for more than half year”. This is believed close to temporary urban population, and so is often employed as an approximation of temporary urban population by researchers (see a review by Y. Zhao, 2000). The reason seems that it is generally believed that temporary population mainly exists in urban areas. According to Y. Zhao (2000), in 1982, 1990 and 1995 the official statistics of temporary population is respectively 11, 29 and 54 million. The datum in 1999 is 60 million (CSY, 2000). Although these are only data for a number of years, a trend seems evident that the growth is moderate at the beginning of the period, rapid in the middle whilst stagnating at the end. The official statistics of city and town population (namely the official “urban population”) for the same year are 215 (1982), 302 (1990), 352 (1995) and 389 (1999) million. Therefore the urbanisation level could be roughly bolstered by 5% (1982) to 15% (1995) — that is about 1% to 5% absolute increase. Research on migration by S. Yu *et al* (1998) concludes that contrary to expectations and compared to the situation in the late 1980s, since 1990, the scale of migration in China has decreased rather than increased.

The case of Suzhou City region also illustrates that during the early years of 1990s, the temporary urban population had undergone a period of rapid growth, and then the growth seemed stabilised (Table 6).

Table 6 Index of urban temporary population in Suzhou city region (1990-1999, 1990=100)*

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total	100	134	204	311	329	323	424	336	385	430
Central Suzhou City	100	103	119	137	138	160	215	224	245	249
Suzhou city region (exc. of Suzhou City)	100	152	253	412	439	418	544	401	465	533

* Original data source: Public Security Bureau of Suzhou City, 2000.

Then how has the features of temporary urban population growth affected the actual statistics of urban population? For the statistics before around 1980, the exclusion of temporary population should not produce serious error since it only involved a relatively small number. But the urban statistics in the last two decades have been underestimates in terms of the number of the temporary population. The extent of the underestimate was small in the early to mid-1980s (around 1% in reference to Y. Zhao's research (2000)), but grew rapidly from the middle of the 1980s until perhaps the early 1990s, when the underestimate reached the peak of probably 5%, and afterwards has basically stabilised.

If the two flaws in the present statistics of urban population are taken into account simultaneously, then how should the validity of the official data on urban population be evaluated? In this sense, the implication seems that the 1950s and perhaps early 1960s the data is basically coherent. Taken this data as the base, the mid-1960s to 1970s data are underestimates mainly due to the effect of tightening of urban designations, both in sense of regulation and application. But the situation in 1980s and 1990s is complicated since the relaxation of urban designation tends to overestimate the data when compared to the standard in the mid-1960s to 1970s. The emergence of a large temporary urban population is obviously a factor leading to official statistics to being an underestimate. So there is a pair of opposite effects. The extent to which the temporary urban population could bolster the existing statistics of urbanisation level, as discussed in the above analysis, is believed to be around 1% to 5%. But there is no detailed calculation of the extent to which the irregular urban designation has overestimated the urbanisation level. The precise evaluation of the

influence of new urban designation on the urbanisation measurement will inevitably involve large scale surveys, which is beyond the capacity of this research. In fact, the evaluation of the temporary urban population factor should also combine the “irregular” urban designation parameters. This again has to be passed over by the study. We can only say that the urban designation factor offsets the underestimation produced by the exclusion of temporary urban population. In other words, two shortcomings in official statistics of urban population collided. Contrary to the criticism against the validity of the official data from a single factor perspective (authors such as Xu, 1997 and Zhang, W., *et al*, 1997, mainly highlight the exclusion of temporary urban population whilst C. Fan, 1998 cites the overestimation due to new urban designation), this actually gives a reason to support the reliability of official data in the 1980s and 1990s.

As a result, the above clarification suggests the attention which should be paid to in the employment of China’s official statistics of urban population. In this context the following section will be able to move to an evaluation of the urbanisation process in China, based on the official data.

Trend analysis of urbanisation in China and the implication for further discussion

Figure 5 Urbanisation level in China: 1951-1999

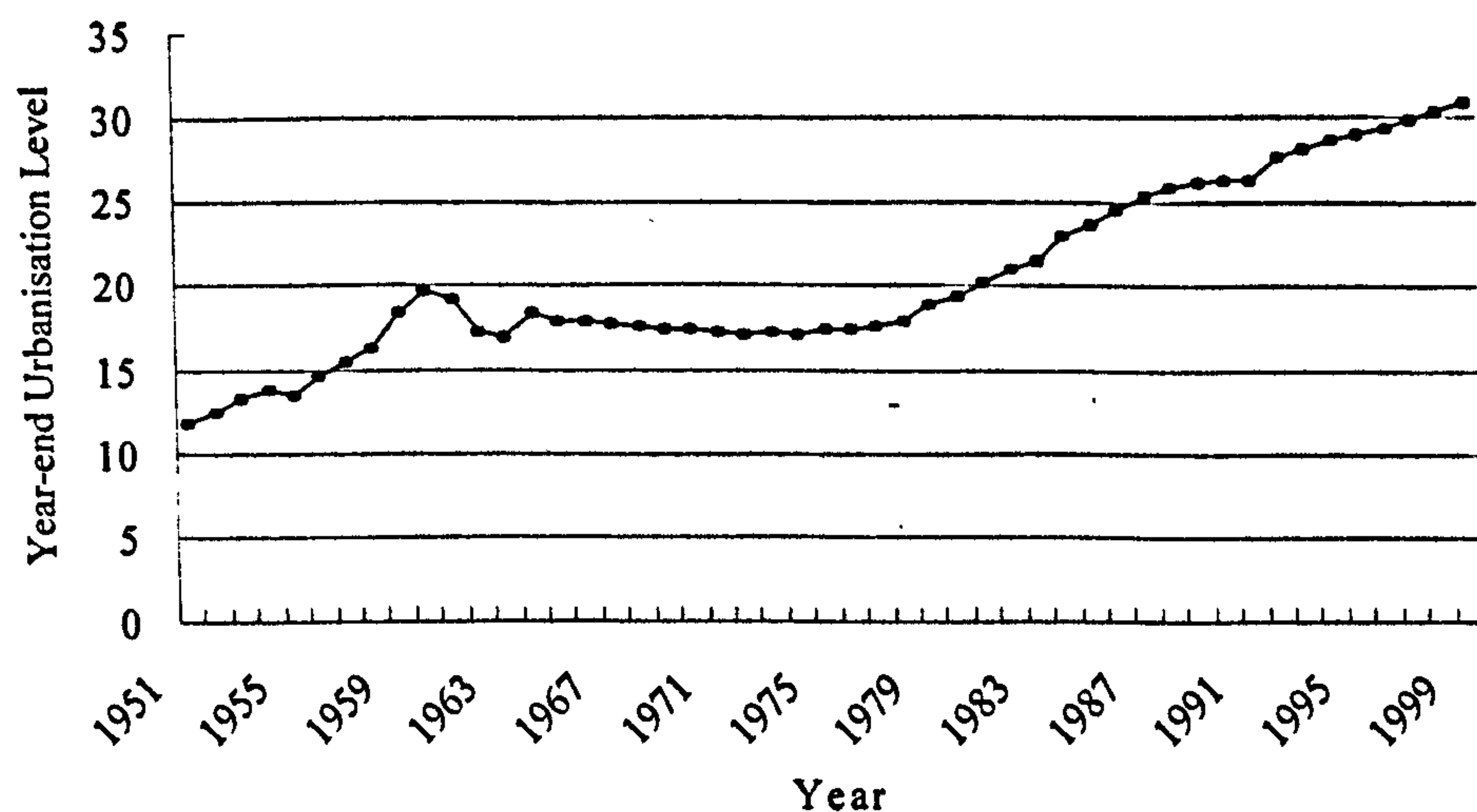


Figure 5 illustrates the trajectory of urbanisation growth from 1951 to 1999 based on national statistics. Regardless of any error, in general there is a great increase of urbanisation level (the urbanisation level in 1999 was 30.9%, an increase of 162% compared to the base 11.8% in 1951). Since there is obviously a stagnation period in about 1960 to 1980, the growth since 1980s sees a trend of accelerating growth comparing to the previous two decades. However, when the situation from 1980 to 1999 is separately examined, then there is a trend towards slowing down of growth. The average annual growth covering the whole 1980-1999 period is 0.6%, but 1990-1999 is 0.5% and 1995-1999 just under 0.5%. Considering that the data in the 1950s is the base datum for the Chinese urbanisation process, then according to these official records, the base growth rate (the average annual growth is 0.9% in 1951-1960) has never been surpassed.

Considering the need of rectification of the data, then a clear point is that the 1960s and 1970s official data are actually underestimated because many qualified settlements were unreasonably rejected for urban status. The 1980s and 1990s data are considered approximately acceptable, at least not as problematic as conceived in the current literature (though the reason for their acceptability is merely in figure rather than in the rationale of calculation). Under this circumstance, the trend of accelerating growth will appear weaker. Even consider that the data of the 1980s and 1990s were underestimated and need to be adjusted upwards, the upward-adjusted growth rate would be still lower than the 1950s base because the rate of upward-adjustment shall not be larger than 5%. 5% is the utmost possible upward adjustment, and with it, the urbanisation growth in 1980-1999 would still be unable to catch up with the 1950s growth pace, let alone there is still the factor of overestimation.

From the above analysis, we can see that the accelerating tendency was not clearly exhibited in the actual urbanisation process. Whilst for people holding the accelerating urbanisation approach, their expectation is the growth level will reach about 1% or

more annually. Xu (1998) cited a prediction of urbanisation level of 2000, 35% and 2010, 45%; which he believed was conservative at that time. He remarked that the accelerating urbanisation approach is unlikely without specific economic conditions.

As this research neared its conclusions, some preliminary results from China's 2000 Census were announced. The urbanisation level in 2000 was 36.1% (NBS, 2001). Quantitatively, this figure looks like an utmost upward-adjustment as the above analysis suggested. It is a huge increase of urbanisation level from 1999 (when the urbanisation level was 30.9%). Once again, this is raising the question of the comparability of data. The fact is, the 2000 census adopted yet a new definition of urban population, different to the 1990 census. Its difference is not the inclusion of temporary urban population as discussed, but a substantial change in the definition of urban area. Obviously, the change of the threshold for a settlement to obtain the urban status (in administrative or statistical terms) can dramatically affect urbanisation measurement. Previously, statistically the urban area where the population is calculated as urban includes "city district", "city street", and "town residential committee" where applicable. In the new standard (NBS, 1999), there is firstly an extra "limitation" which requires that only "city districts" with at least 1500 persons per square kilometre will be treated as totally "urban", otherwise only the *area* where the "city district" government locates will be calculated. But another change not only offsets this "limitation", but also seems to provide a possibility drastically increasing the quantity of urban population comparing to the previous standard. That is, when urban construction has extended beyond urban administrative boundaries, the whole town, township or village with some area being involved in urban construction will be regarded as "urban". Presumably this must be the main reason contributing to the huge growth in urbanisation level in 2000. Due to such great incompatibility, we could not take the newly released statistics into our account. Nor does it pose any powerful evidence challenging the above analysis.

In fact, this again raises the issue of a reasonable standard for urban population

statistics, and seen from the actual statistics, so far this issue has not been properly addressed. The 2000 census figure seem once again to produce much embarrassment in the academic domain as what happened before. This very point implies that to some degree, despite the adjustment of the official data, which inevitably involves approximation, an accurate measurement of urbanisation trajectory in China is not yet available. So, the accelerating urbanisation approach *cannot* be endorsed by the reality. Then what is the reason for its popular acceptance?

The accelerating urbanisation approach has achieved a paradigmatic status, and this implies the existence of some deeper paradigm because the approach is not basic knowledge that can only be achieved from pure observation. The above evaluation has implied that China's experience of urbanisation is not the persuasive reason underlying the accelerating urbanisation approach. Rather, the survey of urbanisation in China suggests that the accelerating urbanisation approach is problematic. So our study will continue to examine if there are any other fundamental paradigms, which will be a task for the next chapter.

4.3.2 What research topics merit attention?

Turning to evaluate another part of "superficial" paradigms in Chinese urbanisation research relates to the dominant research topics, which is much different in nature from the one evaluated above. The selection of a research topic is to some extent a personal thing, therefore subjective and depending on personal value judgements. But just as human beings eventually choose to pursue some common values, there is objectivity in value judgement. Hence there could be an "ideal" research agenda, and this "ideal" provides a base for evaluating the actual research agenda in Chinese urbanisation research. To understand the general principle an ideal research agenda should follow, there could be some "objective" research methods, for example conducting a sociological survey through interview or questionnaire. But this study does not follow these methods, because of both the limitation of the resources for the

study and some relevant ideas being “common sense”. So the standard of an ideal research agenda is defined straightforwardly, and then will be applied to assess the situation of research topics on Chinese urbanisation research.

The stance of this research is simply that, on the one hand, an ideal research agenda of a scientific community should be able to cover the significant issues in terms of the development of human society. On the other hand, as the agenda represents the research focus, there is also a matter of “progress” of investigation. The first aspect may be regarded as a sociological point of view. Research topics in a scientific community should be able to focus and cover the relevant issues in its field. In particular, it should not be forgotten that a scientific community embraces a group of practitioners. Also, it seems obvious that scientists should be more acute in terms of their ability of observing and thinking about the nature of the world. Although there may be lots of important issues and it is difficult to develop an unanimously agreed list, that some of them are collectively ignored seems to be problematic. Meanwhile, the reality changes. So there are always new significant problems, new relevant questions, and scientific research has to catch up with the change.

The second aspect may be regarded as a scientific point. That is, in-depth penetration is obviously among the identity characteristics of science. Following the deepening of investigation, people should find that either the original research problems have been solved, or, perhaps more importantly, there are fundamental issues beyond the original research problems and those issues should be firstly addressed. These factors will lead to the shift of research agenda and the progress in research. Of course, this does not exclude the possibility that there could be occasions when difficult puzzles just stop the scientific progress. But these situations should be analysed concretely.

Based on the sociological perspective, we may well argue that the current research agenda of Chinese urbanisation research uncovered by the previous investigation has missed some critical issues. At the very beginning of this thesis, four challenges for

urbanisation in China were identified: employment sources for urbanisation, potential social inequality associated with urbanisation, impact on the spatial pattern of urbanisation by new forms of transport and communications, and ecological pressures. It seems undeniable that these are all very important issues for research. But none of these is sufficiently dealt with. It is not here to deny the significance of the present research agenda. This is difficult to justify and meanwhile needs more argumentation; and after all the discussion is finished, it will be more ready to produce some implication for this. At this moment, we can suggest however that it is a matter of regret that some paramount topics are not well covered, particularly there seems no reason to classify these issues to another discipline. Meanwhile, it can be found that some of the issues are fairly current in China, such as the stagnation of the growth of employment demand associated with good economic growth and the new technology of transport and communications. In fact, considering the evolution of the research agenda in Chinese urbanisation research before and after 1990, it may well be argued that the change, though there is some, is really limited.

From the “progress” point of view, the distribution of research topics in Chinese urbanisation research also seems to show that the field is not mature. Some research problems obviously require deeper penetration and cannot be adequately explained without a better understanding of the underlying factors. This should have triggered a shift of research topics to the more fundamental factors. For example, the reasons underlying urban population growth are multidimensional and hence to understand the tendency of urbanisation demands an understanding of its multidimensional causes. Then it seems that there should be much “mechanical” study, dealing with the mechanism and mechanical factors of Chinese urbanisation. But seen from the current situation, despite popular concern with urban population growth, which has lasted for two decades, such mechanical study grows only slowly. The mere growth is overwhelmingly in the area of the relation between macro economy and urbanisation. But little is now seen in respect of political, institutional, community, cultural or other sociological factors. Similar problems also exist in the research about optimal urban

size, urban hierarchy and urban system.

In short, the present dominant research agenda in Chinese urbanisation research is also questionable. This equally promotes the investigation to continue to discover the underlying paradigms behind the favoured research topics.

4.4 Conclusion

The survey of the sample papers shows that it is widely accepted that China is or has been entering a period of accelerating growth in its urban population. A few research topics are dominant, specifically the growth trajectory of urban population, the optimal urban size and urban hierarchy, urban system, and more recently the relation between macro economy and urbanisation. But, given actual urbanisation process a factor evaluating the accelerating urbanisation approach, the examination of the actual urbanisation process does not reveal persuasive evidence. Rather, there are negative signals. Meanwhile, from common sense value judgement, the present research agenda is also problematic. It seems to have largely ignored some relevant research issues. Furthermore, there is little indication that the research agenda exhibits a progress and penetrative feature.

The observed paradigms all have significant theoretical and practical implication. For example the accelerating urbanisation approach actually leads to a kind of urbanisation optimism: if a speeding up growth is “an inevitable rule” or “an inescapable destiny” (such comments can be seen in much literature in the field), then people should work towards that direction. So suggestions for reforming policies that are relevant to urbanisation are mainly concerned with migration controls. Tao *et al* (1996) contest that China’s current policy regulating the development of large cities, which seeks to strictly control the expansion of the size of large cities, “cannot fit the speeding up urbanisation under socialist market-based economic system, particularly

the inevitable historical tide of ‘peasantry coming into cities’” (33). Large cities have to absorb more peasants. One of the main controlling measures, the household registration system, should gradually be cancelled. The policy suggestions of M. Peng (1998) and F. Liu (1998) embrace more aspects. As well as reforming the household registration system, M. Peng suggests that in order to “push” urbanisation, “the right of land usage” be freely changeable and more preferential measures be given to the construction of small towns. Liu argues that all policies handicapping urbanisation should be swept away. He particularly emphasises that the commercialisation of housing is a key factor. In city and regional planning, planners have been likely to make optimistic prediction on the urban population growth in their working areas. Consequently, they plan matching growth of urban land and infrastructure. Earlier we have seen some prediction about the urban population growth at a national level. At a provincial level, B. Lu (1998) predicts that the urbanisation level in Jilin Province would reach 70% in about 2028 to 2030, from a base of 41.6% from the end of 1995 (using the proportion of non-agricultural population as urbanisation level). Research (Guideline of Urbanisation in Zhejiang Province, see Hu, 2000) on the prospect of urbanisation in Zhejiang Province predicts that the urbanisation level in this province will reach about 50% in 2010 (at the end of 2000 was less than 35%). In Guangxi, the urbanisation level in 1995 is 20.7% (based on city and town population) whilst it is predicted to grow to 24% by 2000, 36% by 2010 and 50% by 2020 (Wang, Y. M., 1997). A study in Shandong Province believes that with a base of about 25% in 1994, the urbanisation level would reach about 40% in 2000 (Zheng, X., 1994). At a city level, there is pervasively similar optimism. Indeed some scholars have noted a problem of over-optimism (see for example in Shi, 1996; Li *et al*, 1996). Li *et al* warn that an over-optimistic anticipation of urban growth could easily misguide planning. Indeed, since the beginning of the 1990s, there has been growing criticism against city planning behaviour especially that inappropriate city planning has led to rapid loss of farmland, which almost becomes a debate between the planning and land use management authorities (a most direct indicator of this is the issue of the so-called No. 18 Document in 1996 by the State Council).

The question then is how could these paradigms be formed despite their being problematic? Our theorisation of the paradigm suggests that some deeper paradigm must be the reason because these paradigms are not all based on basic knowledge. These paradigms could have various logical backgrounds. The deeper paradigm must be in some of the logical backgrounds. Obviously, the above evaluation also excluded the possibility for some logical backgrounds to embrace the deeper paradigm (for example, the urbanisation process in China cannot be the source leading to accelerating approach). So there must be some other deeper paradigms. The next chapter will further this exploration.

Chapter 5: The Second Level: Theoretical Tenets

5.1 Introduction

Researchers' commitment to the paradigms identified in the previous chapter can be attributed to various causes. Many may simply follow others and accept these ideas without question. Such behaviour may be simply an incidental event, but could also be a paradigm activity. If the latter is the case, then a deeper paradigm behind such behaviour could be a person's conscious or unconscious respect to senior figures or to orthodox ideas. This phenomenon is often conceived to be relative to culture or custom, a source different from rationality (Gellner, 1992). But such commitment to culture or custom seems to be "a paradigm of the paradigm", because its essence is to imply that when an idea is a paradigm, it must be accepted as a paradigm. In this context, "culture" becomes a title inappropriately sanctifying the behaviour of committing to paradigms. That ideas become dominant paradigms due to people's respect to tradition or authority is actually the situation criticised as a "sociological factor" and "secondary scientist business" in the debate around Kuhn's paradigm thesis. But such a potential problem is relatively easy to understand, and its rationale has been explained by the theorisation of the paradigm. So we are not going to further elucidate it.

However, there must be other reasons, which in appearance are more powerful than the kind mentioned above. The fact that some people may be used to accepting tradition or authority seems irrational. Then there should be more rational reasons (though in practice there is perhaps not always an absolute division between “rational” and “irrational” argument¹⁵). Even for those who have simply followed the irrational commitment to paradigms, sociologically obeying the paradigm is after all going after the presumably existing rational reasons backing up those paradigms. The sociological phenomenon of the paradigm, like perhaps most other conceived irrationality, still has interpretable rational reason, as our theorisation of the paradigm has elucidated. The author tries to identify such reason rather than simply stresses the “irrational” factors. This is the ideology informing the present study¹⁶.

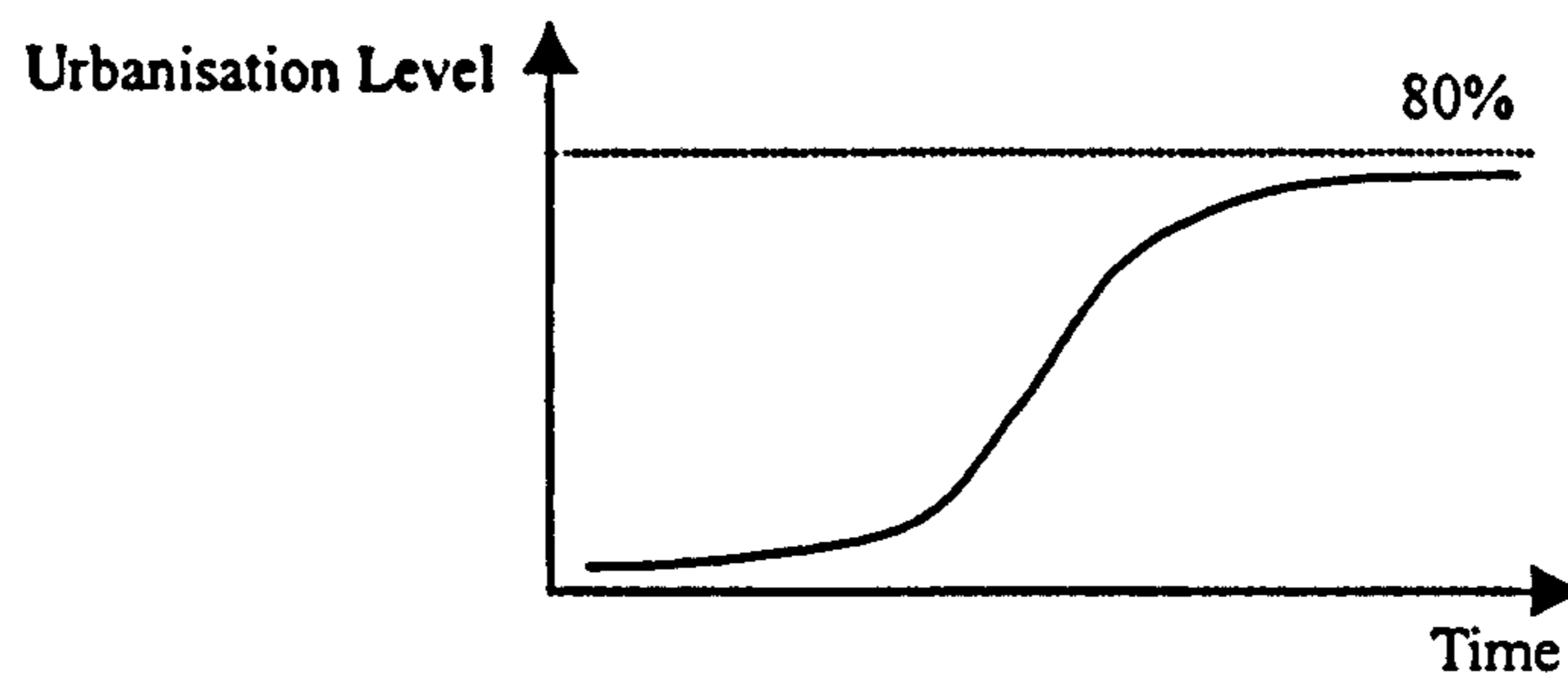
The more powerful reasons underlying paradigms examined in the previous chapter are identified as to involve some theoretical tenets, which arise from some classical studies in the field of urbanisation research. Three key tenets can be explored:

—*The growth in the urbanisation level (urbanisation) is an inevitable tendency associated with “development”. Its trajectory is lawfully an attenuated “s” curve and the urbanisation level will eventually reach at a level of about 70-80% (Figure 6, Northam, cited in Jiao, 1987: 34).*

¹⁵ Normally it is to accept the term of rational or irrational from an argument’s starting point rather than the result. Rational is to follow reason whilst irrational not. But in reality is there really any argument not running after reason? For a normal person, it is probably more appropriate to say that there is only *wrong* reason rather than *no* reason. So rational or irrational is rather judged by hindsight to see if the reason is right. In a philosophical sense, there seems little problem if the rational versus irrational is substituted with right versus wrong.

¹⁶ Therefore, the term of “irrational” is actually often misleading because through classifying some argument as irrational, people are easily guided to focus on irrational factor, hence essentially denying the interpretability of a phenomenon and giving up the effort to identify its real causes.

Figure 6 The “s” curve of urbanisation level growth



—(Modern) urbanisation is mainly pushed by industrialisation. It is certain that industrialisation would bring urbanisation and the “high level” of industrialisation should be followed by high level of urbanisation.

—The process of urbanisation has its spatial “laws”. It is believed beyond doubt that the spatial destination of urbanisation is large city, intermediate-sized city, or small city and towns (that is, the current urban morphology is also our future). The sizes of a city correspond with different social, ecological and economic costs and benefits. So there is an optimal urban size. In a certain urbanisation “stage”, different sizes of urban settlements would exhibit different features of development (such as the expansion of large cities would be quicker in comparison with small cities when urbanisation level is still low e.g. under 30%). The grouping of different sizes of urban settlements in a region would also have some “ideal” patterns.

These tenets have presented themselves as theories of urbanisation, providing general guidance for the specific context, Chinese urbanisation. The accelerating urbanisation approach towards Chinese urbanisation is essentially based on the accelerating urbanisation approach towards universal urbanisation. The formation of current research agenda is actually a natural succession of the research agenda resulting in these theoretical tenets.

The structure of the chapter simply echoes the previous chapter, with the first main section (5.2) seeking to demonstrate the existence of these theoretical tenets based on a review of the sample articles. The evidence suggests that some theoretical tenets are the basic paradigms underlying the accelerating urbanisation approach and the

research topic selection is initially their logical linkage. The second piece of evidence is the fact that when a researcher has to defend his idea or tries to put his idea in a more persuasive way, he will have recourse to those tenets. But normally, as the more fundamental paradigms behind the ideas such as the accelerating urbanisation approach or the selection of a particular research topic, the theoretical tenets often operate without visual intervention. So people are often unconscious of their existence. But logically we should still be able to identify their functioning. In addition, the existence of these theoretical tenets as paradigms in the field of Chinese urbanisation research should be able to be justified through direct examination of the field without reference to the paradigms discovered in the last chapter. These tenets are more fundamental, hence their acceptance should be an even earlier event (in a logical sense) and their working does not necessarily link with the later products.

For the empirical type of evidence, the literature review of the sample papers is the main method. But in this chapter, since no appropriate statistical method is found to estimate the extent to which the paradigms are dominant, in the argumentation, the evidence has to be drawn from a sample of papers from the literature review. This is mainly because the related paradigms are deeper paradigms, and henceforth their functioning does not necessarily adopt visual forms as the paradigm theory suggests, and the concrete functioning ways also vary. This is a weakness because another “representativeness” question occurs (the first is for this study: how can the research really represent “Chinese urbanisation research”?). For this question, on the one hand, the study tries to include more articles as examples in the below discussion. On the other, in including example papers, these principles are taken into account to make sure that the overall situation of Chinese urbanisation research can be reflected, that is, to include: i) reviews of academic symposiums on Chinese urbanisation, which are seen as sources reflecting collective opinion; ii) papers of different types, such as the qualitative versus quantitative/modelling ones, and theoretical arguments versus applied research; iii) papers of different periods, but more particularly papers recently published. The combination of these three considerations determines the final

selection of the papers included in this analysis.

The evaluation of these theoretical tenets will mainly be through logical reasoning, and in some places empirical data will be employed. The examination towards the “valid” connotation of each tenet and therefore its limitation is the main method.

5.2 Are the theoretical tenets dominant?

To demonstrate that the theoretical tenets are behind the accelerating urbanisation approach and the scholars’ preference of some research topics, the first evidence is the logical linkage between them. In this respect, given the growth of urbanisation level is inevitable following “development”, that those who pursue “development” must also pursue urbanisation levels to increase; and if there is anticipated a “rapid development”, the anticipation of a “quick” urbanisation is natural. “Pro-urbanisation” becomes synonymous with “pro-development”. Furthermore, the so-called law of urbanisation level growth directly backs up the speeding-up urbanisation thesis. Once China has found its position on that attenuated “s” curve, its future prospects have presumably been determined. Based on such recognition, it is then natural that scholars would like to (and actually should) carry on research relevant to “urban population growth”. In fact, the first obligation many acquired from the theoretical tenets might be that, say, urban population growth is predictable and understandable with very simple mathematics. They want to know China’s position on the pre-defined curve, or in popular terms, the “stage” of Chinese urbanisation. They calculate the level of industrialisation and compare it with the urbanisation level, and then argue what the “normal” figure of Chinese urbanisation level should be.

In addition, since the correlation between urbanisation level and industrialisation level is defined (how this is defined will be touched in the review below), from the perspective of rapid industrialisation in the past two decades combined with a strong

anticipation for its continuation in the near future, that researchers predict a rapid urbanisation in China will be a natural consequence. Based on such recognition, it is also natural that scholars would like to (and actually they should) conduct research relevant to “urban population growth” and “the correlation between macro economic trajectory and urban population growth”. Furthermore, since it is believed that the urbanisation process has its regular spatial patterns, then discerning such patterns and applying them will be an ideal research direction. With all these commitments (theoretical tenets), effectively the picture of urbanisation turns out quite clear: a few scenarios (such as urbanisation level and urban morphology) provide enough potential for people to virtually predict the whole of urbanisation. So there seems little else needed in the research agenda. It is similar to the situation when people believe that a model embodying a few variables can perfectly describe the society; in this case, there is no need to really learn about the society.

In brief, these tenets on the concomitant behaviour between urbanisation, development, and industrialisation, and spatial laws, suggest support for the paradigms discovered in the last chapter. This suggests the possibility that these tenets are behind the accelerating urbanisation approach and the research agenda. But the more direct evidence would be whether these tenets are *employed as premises* of the ideas examined in last chapter. Their popular existence in literature is also evidence of their position as paradigms. So the next step will explore into the sample literatures to check the practical nature of the argument. In analysing the practical working of these tenets, there are situations when the existence of the tenets is not explicit but their functioning can be identified through logical reasoning. As suggested by the theory of the paradigm, the functioning of paradigms does not necessarily take a visual form. Though the study covered two hundred and eighteen sample papers and, since no appropriate statistical method is found, in this chapter only some examples can be included as a pure “review”. But in practice, three criteria have been simultaneously taken into account when selecting the reviewed papers: they reflect collective opinions, they cover different types of research, and they cover different periods.

At the end of 1982, in the early stage of the formal beginning of Chinese urbanisation research, the first “Chinese Urbanisation Symposium” was held in Nanjing. Reviews by B. R. Li (1983) and Y. Wu (1983) record the main arguments at that time.

According to these reports, the first agreement was

Urbanisation, a process symbolised by the increase of the proportion of population engaged in non-agricultural activity and this population’s aggregation in urban area, is certain product of socio-economic development. ...To push the socio-economic development and modernisation of our country, we have to follow the way of urbanisation. (Li, B. R., 1983: 27)

It then continues

After analysing the historical urbanisation process in our country, scholars agree that compared to the law of urbanisation, the speed of China’s urbanisation is quite low. Particularly, from the end 1950s to the middle 1970s, China’s urbanisation had undergone a troubled development. ...The national economic development will inevitably speed up the process of urbanisation. Conversely the continuous increase of urbanisation level will also further the national economic development. (*ibid*: 27)

From these records, when the viewpoint is expressed that the pace of China’s urbanisation is low and that the development will bring about a speeding up period in the future, its logical premises which can be identified are that urbanisation is a concomitant of development (“certain product of socio-economic development”) and urban population growth has a certain trajectory (obviously an element covered by the so-called “law of urbanisation”, though not explained in detail). Reports of another topic in the meeting shows that the argument further suggests that since urbanisation is widely accepted as a certainty following development and accompanies certain trajectory, the growth prospect of urbanisation in China has been pre-defined (“huge growth of urban population”). So the remaining question will be how to accommodate this population:

Attendees (of the meeting) have all agreed that urbanisation is an inevitable tendency following socio-economic development without any exception of country or political system. In this case, now the question is, since there will be huge growth of urban population until the end of this century (last century), where to accommodate them? What is the appropriate way for China's urbanisation? (*ibid*: 28)

In 1998, there was another symposium on Chinese urbanisation and urban development organised by the national authority regulating urbanisation, the Ministry of Construction. A consensus of this conference was that China is entering an accelerating period of urbanisation (*City Planning Review* correspondent, 1998). From this review, the reason underlying this consensus is apparent. It is the idea that urbanisation is a concomitant of development and industrialisation, that it has a trajectory following certain laws and is correlated with industrialisation:

Experts point out, the objective law that industrialisation will certainly bring about urbanisation has not been well recognised by many. ...It is appealed that urbanisation should be taken positively, as it is a symbol of development, which is inevitable if our country is going to realise industrialisation and modernisation. ... Some argue that currently, there is a serious "urban deficit" in our country and pushing urbanisation is a key to solving many social problems currently and in the future. (54)

In addition, it is mentioned that according to international experiences, an urbanisation level 30% is about the critical point where accelerating growth begins. A similar consensus is also recorded in another review paper:

Since China's economy is entering the stage of speeding up industrialisation, urbanisation will speed up correspondingly. ...When a country's urbanisation level surpasses 30%, it will enter the stage of speeding up urbanisation. Since there is huge pressure of rural surplus labour migration in our country, the inner impulse of urbanisation is very strong. So the stage of speeding up urbanisation may come earlier. ...In 2000 when the GDP per capita reaches 800 to 1000 USD, the urbanisation should also be close to 36%. (Yi, 1996: 15-16)

In other papers, Z. Lin (1984) for example analyses and concludes that there is an inevitable association between industrialisation, development and urbanisation. So he concludes that the urbanisation level in China is still very low and has a prospect of speeding up growth. In an essay discussing the prediction of urban population, Xu (1997) advised that China is going to undergo a speeding up of the urbanisation levels,

which it is claimed is an “objective requirement of socio-economic development”. Actually Xu later delivered a paper questioning the accelerating urbanisation approach (1998) which he supported on this earlier occasion. His later paper is one of the few cautious voices towards the accelerating urbanisation approach from the literature this writer has reviewed (calculated in 4.2.1: Table 3). More typically Q. Wei (1995) predicts the urbanisation process in Guangdong Province. He expects that since urbanisation will follow the attenuated “s” curve, Guangdong has been in the speeding up period of urbanisation and the tendency will continue until a relatively high urbanisation level is reached.

In the literature, one popular viewpoint which also helps to support the accelerating urbanisation approach is that Chinese urbanisation has been unhealthily lagging behind industrialisation (Chen *et al*, 1995; Li *et al*, 1996; Ma, W., 1997; Hu, 2000). Some further argue that the lagging behind of urbanisation has seriously affected economic development. Obviously, such an assessment is made in terms of that there should be a healthy speed of urbanisation associated with industrialisation. A similar commitment is that there are “stages” in the process of urbanisation, which means urbanisation in a place must be able to define its current “stage” corresponding to certain factors. And then its prospect can be foreseen. Such a view undoubtedly is another version of the “urbanisation law”. In a paper foreseeing the prospect of Chinese urbanisation in next century, B. Chen (1998) states that there must be primarily a appropriate definition of the “stage” of Chinese urbanisation. Understanding the stage of Chinese urbanisation, the prospect of speeding up growth becomes obvious. H. Chen *et al* (1990) analyses the stage features of spatial evolution of urbanisation, and then applies this to the urban system planning in Weihai, Shandong Province. In a paper discussing planning in Jilin Province, B. Lu (1998) concludes with a viewpoint that urbanisation in Jilin Province has been “abnormally over-developed”. The basis of his reasoning is the stages approach which finds “laws” of trajectory of urbanisation and the correlation between urbanisation and development.

In a planning analysis for Yueyang City (Wu, Q., *et al*, 1990), which we consider a typical applied study, the development future of this city is predicted, with a main content being the planned size of Yueyang in 2000. The conclusion is that urban non-agricultural population will reach about 600,000 in 2000, 2.3 times as high as the base figure of 262,000 in 1987. Again, the key reasons leading to final prediction are essentially that urbanisation is a concomitant of development and has a law of trajectory, and ideal urban grouping requires an ideal “size structure”, and size is a measure of advantage. It firstly compares the urbanisation level in China with that in other places in the world and emphasises the certainty of urbanisation (again, we must say, “the law of growing urbanisation level”). Based on this, the paper suggests that Yueyang City will have a large scale development. Secondly, it points out that in a large area around Yueyang City, the urban density is low and there is no large city. Thirdly, the paper argues that a large city will be more attractive than a medium-sized or a small one because of larger scale of economic aggregation and higher product efficiency and profit. Finally, the paper suggests that Yueyang City has a very high industrial product efficiency, which is only lower than Shanghai in a comparison to many advanced large cities in China. This seems to prove that Yueyang City has the capacity of becoming a large city. And following the growth of the city size, the paper believes that Yueyang City will further improve its productive efficiency (therefore a benign cycle in the expansion of the city would occur).

For the spatial aspects of urbanisation, there seems a commitment that “size” is paramount in determining the quality of a city. In a classical essay, city size seems regarded as the source of much city illness:

In capitalist urbanisation, the demographic growth in large cities is far more quicker than in medium-sized or small cities. This has produced a lot of difficulties in people's work and life in the cities, such as transport congestion, serious pollution, crowded accommodation and other social problems. This is a kind of abnormal development of the city and exacerbates the conflict between the urban and the rural. It arouses people's attention to the issues like the reasonable sizes of the city, to control the growth of the large city and to encourage the development of the small city and town. (Wu, Y., 1979: 14)

City size is considered as affecting not only the economy of urban construction as well as the quality of urban product and life, but also the relationship between the agricultural and non-agricultural population, between the rural and the urban (Wu, Y, 1979). It is also regarded as a signal of product relationship:

Different political systems have different distribution patterns of urban population. In capitalist society, due to the private ownership of the productive elements, unregulated competition and monopoly leads to high aggregation of industries, capital and population. This is the reason of the abnormal development of large cities in this kind of society. (16)

Such commitment seemingly helps to establish the central position for the research topic on city size in Chinese urbanisation research. Consequently, regulation over city size becomes a central point of China's urbanisation policy.

The tenets regarding urban grouping hold that the grouping of urban settlements in a region has certain or rational patterns in terms of their combination of sizes, functions and localities. Among them, in terms of size combination, it is conceived that all urban settlements in a region or a country should construct an urban hierarchy. The existence of different sizes of urban settlements should follow a certain ratio, which could be expressed as $k=3, 4$ or 7 , oriented from Christaller's central place theory or rank-size linear allocation, in line with Zipf's research, or something else oriented from other research. Although for different scholars, there might be various favourable patterns, one common point is that, though barely stated explicitly, whilst by logic obvious, they all accept the existence of such patterns that urbanisation will or should follow.

Associated with this is the commitment to certain patterns of function and locality grouping in urban settlements. Ding *et al* (1988) and Gu (1990) claim that an

exponential function $P=kR^b$ (P represents urban size <population>; R represents urban rank; k and b are parameters) could perfectly describe China's national urban hierarchy. They hence use this model to predict China's urban hierarchy in 2000. By contrast, Y. Li (1997) finds another expectation, because he favours the rank-size linear model, though this is not explicitly stated. His research compares three indicators among different size groups: supra-large city (city non-agricultural population ≥ 2 million), mega-city (1-2 million), large city (0.5-1 million), medium-sized city and small city (Table 7):

Table 7 Comparison of number, total non-agricultural population and gross industrial product among different sizes of city groups in China, 1990

Indicators	≥ 2 m	1-2 m	0.5-1 m	0.2-0.5 m	<0.2m
Numbers	1	2.2	4.2	17.3	37.5
Total non-agricultural population*	1	0.76	0.74	1.36	1.10
Gross industrial product*	1	0.84	0.88	1.90	2.11

* Exclusive of prefectures under their administration

This comparison is argued to demonstrate that in China's urban hierarchy, the weakest links are the mega and large cities, because, implicitly, compared to the ideal rank-size linear model, the mega and large cities should account for more numbers, population and gross industrial product. Li's paper also analyses the development framework for the function structure and spatial structure of the national urban system.

There are many local regional planning studies, which take similar strategies as reviewed above. In a study about urban systems in areas along the coast of Liaoning province (Wang, S., *et al*, 1992), the present urban system in that area is considered immature. The reason given being that there are too many small cities and towns with under 0.1 million population¹⁷ (140) in comparison with only 1 with 1-2 million population, 4 with 0.5-1 million population, 2 with 0.2-0.5 million population and 1 with 0.1-0.2 million population. Obviously, this judgement is made in terms that an

¹⁷ In this paper, the statistical criterion for "urban population" is not mentioned.

ideal urban system should be a size-rank linear hierarchy. Secondly, it is argued that there is no clear function specialisation among urban settlements. There are too many similar industrial projects in different cities. It is also difficult to judge the main function for nearly half of the 148 towns. Finally, the allocation of urban settlements is considered as “out of balance”, since urban population is over-concentrated in several main cities. In another study on the urban system (urban agglomeration) in the Jiangnan Plain, a part of Hubei Province (Deng *et al*, 1997), a key problem is said to be the lack of cities at the level of 0.5-1 million urban population. So there is an urgent need of such cities in that area and developing several such sized cities is suggested as being vital for the modernisation of the whole province. At a relatively micro level, Tong *et al* (1987) put forward a working procedure for rural settlement planning that is based on the analysis of county urban systems (or rather, settlement systems). The position of an individual settlement in those hierarchy models then pre-determines its prospect. That is, even at the county level, there should be the similarly ideal urban grouping model.

The practitioners’ commitment to those tenets can equally be found in the kinds of research taking a quantitative approach. The first example is from Jiao (1987), who tries to deduce the attenuated “s” curve initiated by Northam. He concludes that the evolution of urbanisation level can be expressed by the equation (1):

$$Y = \frac{1}{1 + Ce^{-Kt}} \quad (1)$$

Here Y is the urbanisation level in t year, and C and K are all invariables. Jiao therefore concludes that the graph of this equation is the attenuated “s” curve (Figure 6, at the beginning of this section). But depending on C and K , equation (1) is not necessarily an “s” curve. So why does Jiao ignore the other conditions equation (1) could represent? This is not the most important problem. To examine the validity of such a quantitative study, the main source is its reasoning process. Jiao’s reasoning begins from equation (2):

$$\frac{dY}{dt} = (r_U - r_R)Y(1 - Y) \quad (2)$$

(2) is a calculus equation for the change of urbanisation level. r_U and r_R are respectively the average changing rate of urban and rural population. This equation is derived from the definition of urbanisation level and so has nothing questionable. It is then supposed that since r_U and r_R are variables changing with time, $(r_U - r_R)$ is defined as $K(t)$. So the above equation becomes:

$$\frac{dY}{dt} = K(t)Y(1 - Y) \quad (3)$$

Jiao argues that from equation (3), we can understand that since basically $K(t)$ is positive, so dY/dt is positive, which means that urbanisation level will basically continue to increase. However, since $K(t) = r_U - r_R$, to suppose $K(t)$ positive is to pre-define $r_U > r_R$; but $r_U > r_R$ also means exactly that urbanisation level is increasing. So Jiao's argument is actually circular.

Then, since $K(t) = f(\text{economic factors, policy factors, geographical factors...})$, Jiao supposes there would be no drastic change with all these factors under a stable administration in the short term, and hence with a certain degree of approximation, he defines $\bar{K}(t)$ as invariable K . So equation (3) becomes

$$\frac{dY}{dt} = KY(1 - Y) \quad (4)$$

The solution of equation (4) is equation (1). Jiao argues that equation (4) manifests that the growth of urbanisation level will change directly proportionately with $Y(1 - Y)$,

namely the product of urbanisation level (Y) multiplying un-urbanisation level ($1-Y$). Since this product will be the largest when $Y=0.5$, so (4) demonstrates that the speed of urbanisation level growth will be slow at the beginning, then be quick in the middle, and slow down again after the middle. This explanation perfectly justifies the hypothesis of the attenuated “s” curve. However, equation (4) comprises $K(t)=K$, and in addition, $K>0$. Again we must be reminded that the essence to do so is to set r_U-r_R is a positive invariable. That is, it has been pre-defined that urban population will keep growing at a speed with a certain gap higher than rural population. So obviously, this is again invalid, a circular argument.

The above analysis has revealed three mistakes in Jiao’s argument. So what is the reason beyond his inappropriate logic? One reasonable extrapolation seems that he has already accepted the “urbanisation law”, so he always tries to prove the law rather than deduce it.

A similar example can be seen in J. Zhao’s (1993) argument about the quantitative laws of urbanisation, which is based on an analysis of the economic reasons of urbanisation. There is such an inference:

Divide a country into two big parts: the city area c and the non-city area f . National income NI is the sum of the income in urban area NI_c and non-city area NI_f , whilst national population N equals to urban population N_c+N_f . Based on these basic relations, we can get the below equation about the urbanisation level at t time:

$$\frac{N_{tc}}{N_t} = \frac{NI_t/N_t - NI_f/N_f}{NI_{tc}/N_{tc} - NI_f/N_f} \quad (1)$$

Define

$$A_t = \frac{NI_f/N_f}{NI_t/N_t} \quad (2)$$

and

$$B_t = \frac{NI_f/N_f}{NI_{tc}/N_{tc}} \quad (3)$$

then, the calculus equation from (1) is

$$\frac{d\left(\frac{N_{tc}}{N_t}\right)}{\frac{N_{tc}}{N_t}} = \frac{1}{1-A_t} * \frac{d\left(\frac{NI_t}{N_t}\right)}{\frac{NI_t}{N_t}} - \frac{1}{1-B_t} * \frac{d\left(\frac{NI_{tc}}{N_{tc}}\right)}{\frac{NI_{tc}}{N_{tc}}} - \left(\frac{A_t}{1-A_t} - \frac{B_t}{1-B_t}\right) * \frac{d\left(\frac{NI_f}{N_f}\right)}{\frac{NI_f}{N_f}} \quad (4)$$

Now, based on equation (1) and (4), the essay gives such interpretation:

A country's urbanisation level ... equals to the income per capita in non-urban area dividing the national average income per capita minus the income per capita in urban area. That is, urbanisation level relates to not only the economic situation at the national level, but also the respective economic situations in both urban area and non-urban area. (55)

Moreover, since $NI_f/N_f < NI_t/N_t < NI_{tc}/N_{tc}$, namely $B_t < A_t < 1$, so it is believed that equation (4) tells that

The growth of urbanisation level in a country will change in a same direction as the change of this country's income per capita whilst in a converse direction as the change of income per capita in the urban or non-urban area...(56)

This conclusion seems to demonstrate the tenet that there is a positive correlation between economic growth and urbanisation level growth (the industrialisation-urbanisation tenet belongs to this kind of idea). However substantially, this inference based on equation (1) and (4) is wrong. The reason is

simply that the national average income per capita is calculated through taking into account both the situations in city area and in non-city area:

$$\frac{NI_t}{N_t} = \frac{NI_{ic} + NI_{nf}}{N_{ic} + N_{nf}} \quad (5)$$

Therefore, any increase or decrease of national average income per capita is contributed by corresponding change in city area and/or non-city area. So as in equation (4), there is no base to say “the growth of urbanisation level in a country will change in a same direction as the change of this country’s income per capita”. In that equation, the change of national average income per capita will not bring about any change for urbanisation level. The corresponding change in next two items (city area or non-city area) will totally offset the change in the first item. In fact, equation (1), hence equation (4), is identical. This can be easily proved by putting equation (5) into equation (1).

As a result, here again, although what we see is a problem of logic, the underlying cause seems the author’s deep commitment to some paradigm, the tenet about the correlation between economic growth and urbanisation level growth.

In studies about the spatial features of urbanisation, a recent development is the effort to employ “fractal theory” to interpret the evolution of urban systems (Chen *et al*, 1994; Zhu, X., *et al*, 1998; Chen, Y., 1998). The fractal theory studies a geographical structure, which has self-similarity, so will re-appear, though not necessarily totally the same, at any spatial scale. For example, the classical research of fractal theory is about the coastline of UK (this is introduced in Zhu, X., *et al*, 1998). The coastline is believed to be in a fractal structure, which means in maps of any ratio, people should be able to identify a similar structure — the structure can be infinitely divided, but the

divided part is still in the same structure. So when fractal theory is applied to Chinese urbanisation research, it is to admit that there is an inner structure, which will be repeated at any territory scale. Such application is recommended as “capable of picturing formation and evolution of urban system in a region as well as revealing the implicit simple principles and in-depth rationale beyond the system” (Chen *et al*, 1994: 14). In other words, the writer is committed to the *existence* of the “implicit simple principles and in-depth rationale”.

Since researchers are often unaware of the existence of these paradigmatic tenets, on such occasion they will miss to examine the validity of these tenets. But the theoretical tenets are logical premises leading to the paradigms such as the accelerating urbanisation approach. In this case, even researchers have noticed the problem of the consequent ideas such as the accelerating urbanisation approach. They could not successfully challenge these ideas without changing the commitment to those tenets. In a review by Li, B., *et al* (1996), there is criticism that many predictions about the future size of the city are over-optimistic. However, the paper emphasises that it is the period when China will see both the continuous growth of national population and the transition to high-speed urbanisation level growth. One of the two big challenges facing the planners is to “complete” the process of urbanisation, by which it is argued that the urbanisation level growth will reach its destination of 70-80%, under the market-based socialism economic system:

China’s population is undergoing continuous growth. At the same time, China’s urbanisation is transiting to the stage of high-speed growth. The migration from rural area to urban area is speeding up. ... During the two periods (the middle 1990s to 2010 and to 2050), the field of urban planning will face the challenge of respectively two big issues both theoretically and practically. One is to basically finish the urbanisation process under socialism market-based economic system. Another is to basically realise the modernisation in cities under the socialism socio-economic system. ...(6)

Such understanding about the “macro trend” seems exactly what is held by micro planners. The anticipation of a generally accelerating growth of urbanisation is a factor leading planners to adopt a so-called over-optimistic prediction of urbanisation in

planning practice. So on the one hand, B. Li *et al* criticise the latter. On the other they continue trumpeting the former, a fundamental reason leading to the latter. Similar situation is also recorded in a review of an academic symposium by Shi (1996).

The above review examines the overt and invisible existence of the theoretical tenets summarised at the beginning of this chapter, and their actual influence upon the formation of the ideas such as the accelerating urbanisation approach, and the favoured research topics such as the prediction of urban population growth, optimal urban size and urban hierarchy, and urban system. The quantity and variety of the papers related here should be able to suggest the popularity of these tenets in the whole community.

5.3 The problematic nature of the theoretical tenets

This section will be divided into three, evaluating different theoretical tenets.

5.3.1 Is levels of urbanisation growth a concomitant of development and has a law-determined trajectory?

Three questions can be raised here. The idea that urbanisation, symbolised by the urban population growth, is a concomitant of development, the evidence seems that all of today's developed countries have a high urbanisation level. There are few exceptions lower than 70% (such as Italy at 65.6% and Austria at 53.2% in 1975; HABITAT, 1996). By contrast, perhaps without exception, the lowest urbanisation levels are always seen in the most backward economies. Even in the same group, the correlation between the level of development and the level of urbanisation still seems very strong. For example, in South Korea, one of the most successful examples of Asian new industrial economies, following the huge success in economy during the past two decades, its urbanisation level also grew fast and this is anticipated to

continue (48.0% in 1975, estimated to be 86.2% in 2000, HABITAT, 1996). But as has been noted above, the “urban” has quite different meanings in different countries. So the extent to which degree the urbanisation level measurements are comparable is debatable. Meanwhile, it is also noticed that after the Second World War, urbanisation (or more accurately, rapidly growth of urbanisation level) has become a world trend. This implies that the mass of developing countries have been involved. But the fact is, perhaps most of the developing countries still remain poor today. This demonstrates that rapid urban population growth will not necessarily bring corresponding development. So this “world tendency” could mean nothing for “development”. Hence merely with reference to the world tendency, urbanisation does not form positive linkage with “development”. At last, all these ideas are connected with a goal of “development” or “modernisation”. But such a single standard of progress has been wildly criticised from the economic, ecological and moral standpoints. Some point out that for the question “why we must have urbanisation?” there is only vague understanding (Chen *et al*, 1998). Others point out that it is impossible for every member to join the rich club by the same way (for example see Xu, X., *et al*, 1986).

But this problem might not appear serious for many. There is a question in sense what is the accurate connotation of urbanisation. The reality is that high a level of urbanisation does not necessarily mean development. Nevertheless, it would be evident that there is some essential and common change happening in urbanisation and there is no well-developed or well-developing country with a low or a low-growing urbanisation level. This seems to be the actual reason leading to the theoretical attraction of the Chinese urbanisation process during the 1970s and the early 1980s, when China is assumed a form of non-urbanisation development, different from general practical and theoretical understandings. But many later studies conclude this as “abnormal” and “against the objective laws”, or there was actually little “development” (see for example Wu, Y., 1983; Lin, Z., 1984). Conversely this further strengthened the urbanisation-development alignment. The mere conceived “exception” was removed. Even when it is argued whether the current

development/modernisation-urbanisation model is ideal, in reality it is still the best practice, and therefore is better than any perfect Utopian model.

But there are still other problems or aspects to be clarified. The second and third questions are derived from the pure logical enquiry into the practical implication of the tenet that urbanisation is a concomitant of development. The second issue is concerned with the perspective that, all of the above argumentation is actually viewed from a long-term time scale. In what sense is it applicable to short-term growth is far from clear and there is also no in-depth research on this. How could that “tendency cognition” be employed in, say, a 5-year planning object? That is, there is no certainty about the year-by-year growth of urban population. As a general symbol, “short-term” actually illustrates that the long-term tendency view about the correlation between urbanisation and development, and the growth trajectory of urban population can only provide little practical information for practitioners or policy-makers. In such circumstances, if there must be prediction about urban population growth, the thinker has to resort to other rationales. The complexity of the urbanisation phenomenon, such as the possible tragedy of urban slums, unbearable congestion of transportation, and inhumane built environment etc all becomes issues that could hinder rather than push development. In this context, it is almost sure that the growth of urban population will be excluded from the necessary conditions for development or inevitable results of development.

Finally, the third question is, how to put the tenet in a concrete “regional” context? That is, all of the above argument is put in a general context, but not particular regional relevance. The discussion is based on the calculation of country or world-wide urbanisation. But urbanisation has regional relevance, since it is after all concerned with “distribution”. Concentration or urban population growth essentially happens in some particular places whilst other places are left as areas of de-concentration. So any law of urbanisation if there is, in terms of different places it must have thoroughly different interpretation. And the condition will be even more difficult in practice. A

basic fact would be such a paradox: every local urban authority would like to accept the law of urban population growth and see it happen in reality. But if there is such a law, this specific local place may be in a marginalised position. A relevant paradox is that, since the sizes of the “regions” where we see the “law” of urbanisation vary from very small countries to giants, some would inferentially equate the “region” to a “point”. This is to understand that the rule of urban population growth can apply to *any* size of space, a characteristic same as the “fractal feature”. In fractal geometry, the fractal feature hypothesises a kind of “self-similarity”, in which the same structure can recur in any division of a whole (Chen, Y. G. *et al*, 1993; Zhu, X., *et al*, 1998). Obviously this is not the fact in terms of urban population distribution. One example is, no matter how big a country is, its regions where the urban population keeps a rapid growth are often limited both in number and area. In brief, how the law of urbanisation can apply to individual regions is very uncertain.

As a result, not only is there some vagueness with the correlation between the urbanisation and development and the characteristic of urban population growth as shown earlier, in a more practical sense, those notions are over-simplified and much vital complexity has been concealed. These factors shadow the validity and significance of many optimistic expectation of urbanisation. For example HABITAT (1996) predicts urban population growth between 2000 and 2025 (the base is 1975) in some 221 countries and areas in the world. Except for six countries, expecting a slight decline, a bit more with relatively slow increases until 2000, the rest are foreseen as having continuous and accelerated (comparing the 25-year-growth during 2000 to 2025 with 1975 to 2000) urban population growth.

Of course, the above argument only questions the positive correlation between urbanisation and development, but does not suggest that there should be non-urbanisation development. It only implies that the tenet has no basis to be accepted without question and this then premises further knowledge development. Actually the question about the relation between urbanisation and development is perhaps too

general to have any essential answer.

5.3.2 Is there the correlation between urbanisation and industrialisation?

For this tenet, a key question is, how to evaluate the effect of the changing employment pattern. The changing employment pattern is a large question and relates to different facets such as formal sector and informal sector. Although it is beyond the capacity of this thesis to thoroughly deal with this topic, the evidence of ongoing dramatic change should be able to imply a re-thinking of the tenet concerning the correlation between urbanisation and industrialisation.

The importance of growing employment demand on urbanisation is self-evident. Most scholars admit that modern urbanisation is derived from industrialisation, in which a key factor is an employment boom in the secondary sector, the economic department (normally covering manufacturing, construction and mining) whose economic indicator is normally employed to measure industrialisation. However, the employment demand in the secondary sector is no longer the same as in the past, since technology and capital, rather than labour, are playing a more and more vital role. The consequence is higher and higher productivity per capita, and therefore, the growth of gross product in this sector is not necessarily followed by corresponding growth of employment demand. Rather, if with the rapid growth of economic efficiency, which seems true today, employees may even be excluded from their positions because there is normally no internal demand to push gross product to improve very fast¹⁸. Such tendency is obviously strengthened by the globalisation of the economy, because external competition forces every economic body to improve its economic efficiency. Data shows that the proportion of world employment in industry is going down (Hall *et al*, 2000). This tendency is paramount and Hall *et al* (2000: 22-23) recently ask, “Is

¹⁸ The improvement of efficiency seems always economically beneficial because it will reduce cost. But this is not the case for the increase of gross product, because product can only be turned into profit after it is sold, which is affected by the demand and buying capacity.

it possible, or desirable, to slow the process of globalisation and the growth of labour-saving technology, with all their momentous consequences?" In China, current productivity per capita is still very low comparing to the advanced countries and hence there is a huge potential for improvement. Unfortunately, this on the other hand means that there is a huge potential problem for the employment as a source of urbanisation. In 1995, China had 98 million manufacturing workers, which is far more than the total number of the seven main industrial countries in the world (63 million in 1994; Wang, H. Y., 1998). Meanwhile, the new employment demand following economic growth requires well-educated workers. This brings structural employment pressure over job seekers due to the yet low proportion of educated labour. In advanced provinces such as Jiangsu a decline of the number of working staff (*jiuye zhigong*) was recently observed for the first time in the history of New China (Wang, H. Y., 1998).

This new situation relating to employment arising from the new socio-economic context can be seen more clearly at the local scale. Like most well develop areas in China, economic growth in the Suzhou city region relies on various "economic development zones" (*jingji kaifaqu*). Therefore the employment situation in such areas considerably determines the potential employment increase, and even the general employment pattern in the future. Here we firstly have a close look at one economic developing zone — Suzhou New District (*Suzhou Xinqu*, originally National Suzhou High-tech Industrial Development Zone, *Suzhou Guojia Gaoxin Jishu Chanye Kaifaqu*), which was established in November, 1992. In 1998, the output in Suzhou New District contributed more than 40% of the total GDP for Suzhou City. By contrast, total employees in Suzhou City was 7 to 10 times (depending on criteria used) as many as was employed in Suzhou New District. Clearly, this new point of economic growth generates far less employment than before. In fact, the average GDP per capita in the whole of Suzhou City is only about a quarter of that in Suzhou New District. Based on high productivity per capita, high economic growth has produced far less employment demand. If such development represents the most active pattern, then gradually, economic growth may bring the urban employment down because of the existing low

base of productivity. There is some evidence from the experience of Suzhou City to suggest such a possibility. The number of employees (staff and workers) in Suzhou City has been steadily dropping since 1992 (by 14% up to the end of 1998)

J. P. Song (1996) analyses the case of TVEs (Township and Village Enterprises). After surveying the growth of the employees in TVEs from the early 1980s to the early 1990s, Song notices that after 1988, the capacity of TVEs to recruit new employees dramatically drops. He meanwhile emphasises that this is not due to the slowing-down of the industrial output. Rather, the decline of employment demand in TVEs is the result of the capital and technology substituting for labour:

During 1984 to 1988, the TVEs employed 12.60 million rural surplus labours per year. But ... from 1989 to 1992, this figure drastically decreased to 2.60 million. ... From 1978 until 1984, every one per cent of rural non-agricultural product will see 0.65 per cent of non-agricultural employment. But to 1993, the latter indicator decreased to only 0.13 per cent, which is only 1/5 as much as the one in 1978 to 1984.

Hence, theoretically it is problematic to hold that there is a positive and clear correlation between industrialisation and urbanisation as Weber (1899) implies in his classical work more than a century ago.

But there is a situation which can overcome the above problem concerning the correlation between urbanisation and industrialisation. That is, the employment growth in the secondary sector is not the key reason underlying the correlation between urbanisation and industrialisation. Rather, growth in the secondary sector is only an indicator of the overall economy, and following it is the overall growth of employment opportunities. For example the growth in the tertiary sector may be dramatically pushed by the growth of product in the manufacturing department. In this circumstance, the tenet about the correlation between urbanisation and industrialisation, symbolised by indicators such as the correlation between gross industrial product and urbanisation level, is still tenable. The difference is that the underlying rationale is not the same as that of perhaps a hundred year ago. This could

be an alternative, but needs examination. More importantly, although the expression, that there is a correlation between urbanisation and industrialisation, remains the same, the substance has changed. There has to firstly be a break-through from the old orthodoxy regarding the relation between urbanisation and industrialisation. The old experience demonstrating the correlation between urbanisation and industrialisation can no longer be evidence of the *new* idea. The direct measure of the relation between urbanisation and industrialisation also may have well changed. For example, Guo *et al* (1990) recorded the change in the relation between general economic growth and employment, which shows that to produce the same volume of employment growth needs far more proportion of economic growth than before¹⁹:

From 1952 to 1958, every per cent of non-agricultural product growth in China only sees 0.48 per cent of employee growth. Whilst in UK, from 1801 to 1961 this ratio is 1:1.01. In USA, from 1839 to 1958 this ratio is 1:1.06. And in Canada, the 1870 to 1965 figure is 1:1.04. (16)

In brief, given that there could be such an alternative version of the urbanisation-industrialisation approach, the current handling of this approach is still problematic, which is in a perspective coherent with the past experience of urbanisation process.

In brief, the change of the context suggests a change in the correlation between industrialisation and urbanisation. There are similar ideas which stick to a linear correlation between economy and urbanisation, and such commitments seem to easily conceal the changes in the real world.

¹⁹ Guo *et al*'s data is referred here. Based on it the thesis makes our own interpretation. Indeed, Guo *et al* ascribes such change to the abnormal policy in China, which from our analysis is not proper. Substantial economic reasons were ignored.

5.3.3 Are there spatial laws of urbanisation?

The commitments to the spatial laws of urbanisation seem particularly challenged by the reality. For example, to the belief of an optimal size for cities, the reality seemingly always exhibits an opposite feature against some theoretical inference. The large city seems to have long been criticised as concentrating lots of the urban ills. But it seems to never lose its dominant authority throughout the world and the growth of large cities is perhaps the most durable and stable among all urban settlements in modern age. Recently, the rapid expansion of the metropolises in developing world is very impressive (see for example, McGee, 1998). At the same time, with the deepening of globalisation, words like “global city” or “world city” reclaim the dignity of large cities, which makes the large city policy in many places change completely: growth control substituted by growth promotion. This new “discovery” of the so far irreversible growth of large cities has likely changed the academic consensus, which in turn admits to the inevitability of the growth of large city. Following on from this there appears to be some confident prediction about the future sizes of the world’s megacities, particularly those in the developing world. But seen today with reference to the newest statistics, many such prediction are found to be over-optimistic (HABITAT, 1996).

Such evolution of the idea surrounding optimal city size shows the disparity between the reality and the relative theory. It illustrates the immaturity of theoretical conception. Cities of similar sizes could have very different features, whilst cities in different sizes could have similar characteristics. For instance, it is normally believed that the larger the city, the higher the economic efficiency it will have (Zong, 1988; Zhou, Y., *et al*, 1988; Wang, S., 1994; Zhang, Z., *et al*, 1998). But S. Zhao (1996) compares three indicators, and large city does not win with any of them. There is no need to resort to any more empirical or theoretical evidence. The problem here is explicit, namely “size” itself only tells a little. There is much more beyond the size to determine the advantage and disadvantage of a city. Therefore, it is irrelevant to indulge in the topic

of size. As Tao *et al* (1996) point out, the debate is over-generalised. Y. Zhou *et al* (1988) have long ago pointed out that to meet the debate of optimal urban sizes is to break the frame of size-centred speculation. Very recently in H. Wang (1999), there seems to be a positive implementation of this initiative, where “system function monitoring of a city” (*chengshi xitong gongneng jiance*) is put forward instead of China’s size-control regulation. But these are only a few exceptional perspective.

Similar problems apply to other commitments to spatial laws of urbanisation. For the idea that the grouping of different sizes of urban settlements has specific rules such as urban hierarchy, the empirical evidence seems fruitful. But the factual evidence can hardly perfectly fit the theoretical hypothesis. In fact, the Zipf law and the Berry law and the Pareto law of the size distribution of urban settlements are derived from statistical simulation. The idea of urban hierarchy based on Christaller’s central place theory may have a different nature, which is oriented from theoretical deduction. This further demonstrates that the theory itself is idealised. Then afterwards much empirical evidence verified it in principle. In short, it is only in the sense of statistical “probability” that these models are true. But the reality will never exactly follow them (Fan, C., 1998). So an obvious shortcoming in applying these ideas is how can we guarantee in advance that the research object would fit the theory? If we cannot, then what we can provide should only be a possibility other than a certainty. But this is obviously not the actual conception in most users of such tenets, for they directly apply the ideal models to planning.

But many practitioners employing these ideas have another commitment: the theoretical models are ideals that the practice should aim at. True this must be also a conviction for many theorists engaged in research on such topics (see a review in Fan, C., 1998). But are these models really “ideal”, most “reasonable” and worthy of pursuit? This is a question seems very difficult to answer. But for the theoretically real “ideal” models, such as the central place theory and its ramifications, inevitably the ideally set premises. Since the concrete context can hardly satisfy these premises,

these ideal models can hardly be the genuine ideal for practice. In fact, the reality is too complicated to be idealised. So as C. Fan reviews Berry's viewpoint that, after all it is complex forces that determine the grouping of urban settlements. Inevitably, most theoretical hypotheses have to be established on a premise that most of these factors are static. This may be called a "scientific compromise". So such efforts try to concentrate the "mega-system" of our society into several elements can only have very narrow applicable context. Arguably the real significance of these interpretative approaches should not really be offering any ideal model for action to follow; rather, they function to deepen the understanding upon the several factors focused upon.

In short, basically the theoretical tenets of the spatial law of urbanisation seem to have over-idealised the true process of urbanisation, and hence only have limited validity.

5.4 Conclusion

The evaluation demonstrates some of the problems with the examined tenets. But earlier the review has shown that these theoretical tenets are widely accepted and contribute to the formation of applied ideas such as the accelerating urbanisation approach and the research agenda for Chinese urbanisation research. The problem of these theoretical ideas partly determines the problem of the paradigms at the applied level. In this case, even the problem of the applied ideas such as the accelerating urbanisation approach is noticed, if researchers still hold the theoretical premises, the real change can hardly happen. On the other hand, since these tenets are deeper paradigms and often work in the background and even without overt, unique existence, people could ignore their existence and functioning, whilst actually it is perhaps after all their existence and acceptance as paradigms that produce the occurrence of these paradigms of applied ideas.

Then, the same question as we asked in the last chapter is relevant. How could these

paradigms of theoretical tenets exist? In fact, some of these tenets may look like assertions and seem easily contestable at first sight. But they exist and work. This has some reason, which the next chapter will try to examine. And, according to the theory of the paradigm, the support behind paradigms of complex knowledge should involve some other paradigms.

Chapter 6: The Third Level: Basic Research Methodology

6.1 Introduction

This chapter mainly seeks to explore the underlying reasons leading to the occurrence of the paradigms of those theoretical tenets examined in the previous chapter. This involves some epistemological or methodological paradigms in deciding the way of generating knowledge concerned with urbanisation or Chinese urbanisation. These paradigms, which are in the category of basic knowledge (its generation and evaluation depending on human intuitive observation rather than on other premise knowledge), lies at the deepest level of the paradigm hierarchy in Chinese urbanisation research. But as pointed out earlier, in practice the formation of paradigms, or generality of knowledge, is often more complicated than we can describe. Particularly for a social science field and for a group of practitioners, the actual process of knowledge accumulation could hardly be cleanly structured and unanimous. Therefore the study seeks to uncover the representative and relatively important and yet problematic paradigms. So as repeatedly emphasised, the intention is not to reflect all the paradigms in the reality. Even for those paradigms that are concretely examined, it is inappropriate to equate them to reality. They are, and can only be, the abstract or symbolised approximation of their practical counterparts. So behind or similar to the

theoretical tenets, there could be actually other ideas, theories, research achievements or observations. There could be also sociological factors, such as people being apt to accept the orthodox, or their tendency to simplify the message they received. This seems to be a reason for “mistaken reading” of theories or research achievements. But the study merely hopes to grasp and explain the main points.

At this moment, for the paradigms that lie behind the theoretical tenets, and hence behind many other subsequent ideas, two epistemological ideas are involved. One concerns the basic research method, which leans considerably towards empirical induction. The other concerns the basic research scope, which is heavily concentrated within the category of “urbanisation phenomenon” rather than extending to the causes of urbanisation. Urbanisation phenomenon refer to transformations with spatial relevance, such as demographic aggregation, the concentration of second and third sectors, specific physical landscapes and so on. By contrast, the causes of these transformations are other economic, social, technical or institutional factors such as the “aggregation efficiency” of economic behaviour, the pursuit of better income, policy impulses and so on. With such epistemological paradigms, the occurrence of the paradigms at the theoretical level will be found reasonable. But these epistemological commitments have deficiencies, which is ultimately part of the reason for the problems associated with the knowledge examined earlier.

Echoing the structure in the previous two chapters, the main body of this chapter will include an empirical investigation of the dominance of some epistemological paradigms, followed by a section of paradigm evaluation. As in the previous chapter, the demonstration of the existence of those epistemological paradigms firstly includes a logical analysis of the linkage between the supposed empirical commitments and the theoretical tenets discussed in the previous chapter. The relevance is twofold: helping to prove both the existence of the epistemological paradigms and the hypothesis that these paradigms are behind the theoretical tenets. Secondly, through review of the sample papers, the linkage between the two levels of paradigms will be examined with

empirical evidence. Moreover, if these epistemological commitments do exist, then this is not merely an event particularly relevant to the theoretical level. Rather, these could be elements innate in common research behaviour, for there could be an earlier event that these epistemological paradigms, part of the premises underlying the theoretical tenets, were accepted as paradigms. The role of paradigms will not necessarily be retained for some peculiar contexts. This is the real significance of paradigm examination, for although the discovery of a paradigm is always hinted at by some particular knowledge (e.g. in the present study, it is those theoretical tenets that inspired the discovery of the epistemological paradigms), the actual relevance of a paradigm is often more widespread. So there will also be an examination of the epistemological paradigms in general research behaviour, which is by review of the two hundred and eighteen sample papers.

6.2 Is the basic research methodology dominant?

Following the above analysis, the evaluation of the extent to which the epistemological paradigms are dominant will firstly go through the logical linkage between these paradigms and those theoretical tenets tested in the previous chapter. Then whether such linkage is true in practice will be checked through a literature review. Finally, the situation in general research activity of Chinese urbanisation research, again, represented by the two hundred and eighteen sample papers, will be examined.

Recalling the theoretical tenets of urbanisation in the field, it will be noticed that empirical induction of urbanisation phenomenon in some situations results in these tenets. For example, generally, observation of the history of today's developed countries would suggest that urbanisation is a concomitant of development and industrialisation. The survey of the urbanisation history in these countries or even world-wide will give a strong impression that urbanisation will follow a law-based

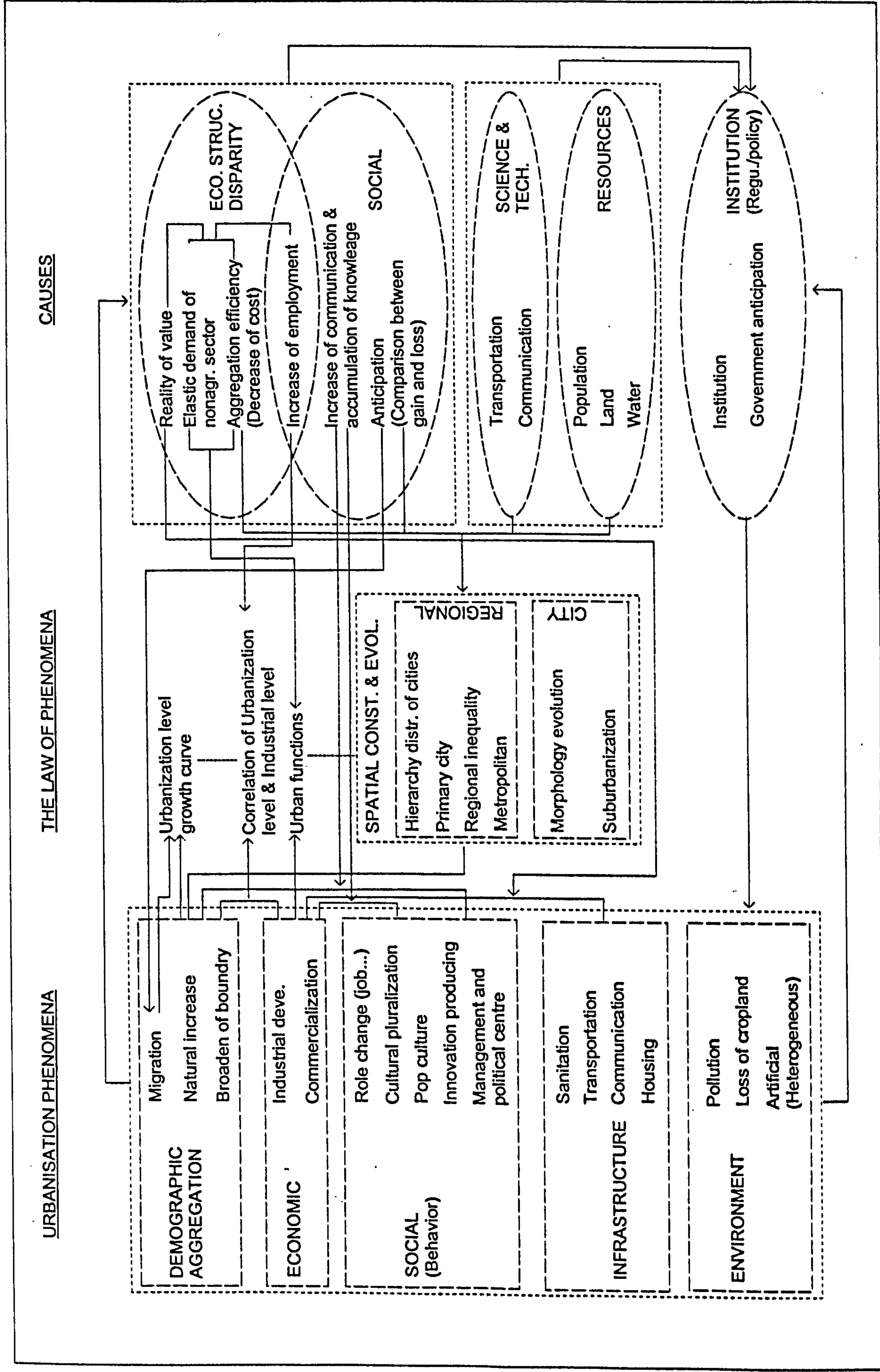
trajectory. Generally speaking, cities in the same size category in different places do seem to exhibit some common benefits and disadvantages. This seems to suggest that size is a paramount factor determining the nature of cities. Also, surveys of urban settlements in regions everywhere would reveal some common features in the grouping of urban settlements, among which some are of urban hierarchy and some perhaps of urban system. All of this suggests that induction as well as the scope of urbanisation phenomenon could be the methodological basis of the theoretical tenets.

Here the thesis devises a structural conceptualisation of urbanisation, which pictures a situation of how urbanisation phenomenon and empirical induction could have played vital roles in the practical development of urbanisation knowledge. This begins from existing definitions of urbanisation. When people get close to the concept of urbanisation, they may find many definitions, according to different scholars and to different disciplines. Such divergence basically is conceived acceptable and the existence of distinctions is generally ascribed to different emphases. For example, to geographers the spatial attribute is the most important, thus “urbanisation refers to the increase of the population living in urban places” (Sit, 1985: 1; also see Zhou, Y., 1984). Alternatively geographers may emphasise the essential importance of migration into urban areas (Ma, Q., 1983). So urbanisation is the process by which rural people migrate into urban areas (Wu, Y., 1983, 1985; Ma, Q., 1983). Sociologists on the other hand define urbanisation from the standpoint of social relationships and organisations. The city in Max Weber’s eyes is a kind of “community...with special political-administrative structures” (1921, reprinted 1958: 80). But although people generally do not judge these conceptualisations as false, they find such definitions possess “emphases”, in other words, biases. Thus, Friedmann and Wulff (cited in Lin, G., 1994: 4) state: “Like the blind examining the elephant, different urban historians would seize upon a single feature of urbanity and proclaim it as true and only one.” So, there occur the efforts to synthesise the different facets of urbanisation into a new concept. In this respect, G. Lin (1994) summarises three viewpoints. The first is by Lampard, who believes that there are three conceptions of urbanisation in the social

sciences: the behavioural, the structural and the demographic. The second is by T. McGee, who stressed three main facets of the urbanisation process: demographic, economic, and social. The third is by Friedmann and Wulff, who define the city (actually not specifically “urbanisation”) as a social microcosm and hence a multi-dimensional phenomenon displaying a variety of characteristics. G. Lin concludes that “by the 1970s, a consensus had been reached on the multi-dimensional nature of the urbanisation process: urbanisation in both the developed and the developing nation is necessarily multi-dimensional” (5). But G. Lin’s conclusion of “multi-dimensional” informs only a little essential about the process of urbanisation. Considering such inadequacy with the present conceptualisation of urbanisation, it seems that a conceptualisation of urbanisation based on its structure could characterise the nature of urbanisation more appropriately.

Things keep on changing. But they possess their own relatively constant underlying structures. It is the existence of these relatively stable structures that permits people to recognise the nature of this world through turbulently changing phenomena. This is a structuralist notion. In terms of urbanisation, we may define it from various phenomenon or phenomena (though the phenomena chosen are considered as “substantial”). Actually from such a perspective there are many “urbanisations” — the European pattern, the American pattern, the Chinese pattern and so on. This should be a reason for some to conceive that Chinese urbanisation research should diverge from that concerning developed countries in general. Certainly the existence of distinctions is justifiable but very often we ignored the essentially similar structure. For urbanisation, the eternal structure should be the basic dynamic mechanism between phenomena and causes. So there could be many phenomenal definitions, but essentially only one structural definition. Research aiming to prove the phenomenal distinction might always seem satisfactory because there are never “two leaves the same”. But without sufficient consciousness about this intrinsic unification of “various urbanisations”, we cannot really grasp the substance of their distinction. We represent the structure of urbanisation in Figure 7:

Figure 7 A structural conceptualisation of urbanisation



This structural conceptualisation is aimed at representing the structure of urbanisation. So although the details have been carefully elaborated, they are not the most important. The point of this conceptualisation is the way it reveals the relationships between various economic, social, technological, environmental factors and urbanisation phenomenon such as demographic aggregation in a location. From this figure the appropriate concept of urbanisation is suggested as a multi-dimensional spatial phenomenon produced by multi-dimensional causes, with its predominant phenomenal aspect being the concentration of population in urban area. That is, although one phenomenal aspect could represent the superficial identity, the substance of urbanisation lies in the interaction of its multi-dimensional causes and the consequently multi-dimensional spatial phenomena. By contrast, most of the definitions of urbanisation we have got used to (as previously cited) seem to heavily lean to one or several phenomena groupings. This may represent some degree of ignorance in academic thinking, consciously or unconsciously, of the causality of urbanisation. In fact, seeing the theoretical tenets of urbanisation examined in the last chapter (included in the middle column of Figure 7), the implication is that they are actually all generated from empirical induction of urbanisation phenomenon.

In brief, theoretically it seems reasonable if the induction method and urbanisation phenomenon (scope) construct the methodological basis of many tenets of urbanisation. In the urbanisation practice of China, evidence does suggest that when researchers defend those theoretical tenets, their logical base is predominantly induction. Z. Lin (1984), W. Ma (1997), Yao *et al* (1997), Hu (2000) and X. Zhong (2000) all emphasise that urbanisation should keep a compatible path with industrialisation and development. Their evidence is all from the experience from other countries, developed or developing, individual country or the world situation as a whole. Some particularly suggest the law-determined growth trajectory of urbanisation level (see for example Zhou, Y., 1984; Xu, 1997; *City Planning Review* correspondent, 1998 and Lu, B., 1998), and their evidence is also the so-called international experiences. Ch. Wu (1990) and Zong (1988) argues that the large city

should be favoured in urbanisation strategy, which are all based on predominantly “performances” of cities. Y. Yu’s study (2000) adopts a totally different strategy to argue the optimal urban size. He takes a quantitative line and employs a model analysing large quantity of data. This again is induction, though based on a large database. Chen *et al* (1990) applied the idea of urban system. He employs the experience of America and the world to explain the ideal urban system. In all of these arguments, the view is overwhelmingly from the urbanisation phenomenon standpoint.

The overall evaluation of the basic methodologies in the two hundred and eighteen sample papers placed the emphasis on the assessment of basic research method. Preliminary checks on the methods employed in actual Chinese urbanisation research helped to determine the classification system:

- (i) Induction: the research seeks to derive general principles from particular facts or instances.*
- (ii) Deduction: the research in general is a process of reasoning in which a conclusion follows necessarily from the stated premises. It is often inference by reasoning from the general to the specific.*
- (iii) Quasi-deduction: the research is essentially “theory-” or “law-” based, but does not take an apparent format. This type mainly includes some theory-application papers. For example, studies about urban system planning are de facto based on the theoretical tenets of urban hierarchy. But in such papers, there is usually no examination about relevant theories. In other words, researchers are unconsciously employing the method of deduction²⁰.*
- (iv) Descriptive, normative or prosaic: This class includes firstly the “research” which*

²⁰ Later we will evaluate that such kind of deduction is similar to the “single-directional” deduction, namely the actual premise is totally accepted without any possibility of being impacted. In fact, the mechanism of the paradigm, a core content of this thesis, exactly depicts such a situation. The only difference here is that, here it is particularly referred to the situation that the paradigm works as the basic premise of the whole research. Whilst in general, the paradigm could work in any place.

is essentially description. Secondly, the research is the discussion of the practical goal and action based on "ideal" or value-judgement. Finally, the paper is a very general discussion, such as a comprehensive discussion about the situation, problems and tactics for urbanisation in a place but without a well-penetrated focus, or a review (aims to introduce) about the research progress.

The induction-deduction dichotomy is found insufficiency to classify the basic methodology styles in sample papers. The research of quasi-deduction type, includes many papers on practical planning projects, which are mainly the routine working papers based on legal regulations. The descriptive, normative or prosaic style of logic cannot be absolutely distinguished from induction or deduction. For example descriptive research is close to induction. But here we refer to induction or deduction in a strict sense, so the descriptive, normative or prosaic style of work is separately classified. Based on the above criterion, each of the two hundred and eighteen sample papers is assessed and classified on its main research method, which results in the statistics below (Table 8):

Table 8 A methodological classification of the 218 papers

		Induction	Deduction	Quasi-deduction	Descriptive, normative or prosaic	Sum
<i>Economic Geography</i>	1981-89	4	16	21	14	55
	1990-2000	11	29	28	19	87
	Total (t1)	15	45	49	33	142
<i>City Planning Review</i>	1977-89	3	11	18	-	32
	1990-2000	7	12	23	2	44
	Total (t2)	10	23	41	2	76
t1+t2		68	25	35	90	218

This shows that papers adopting the inductive approach as the overall research method constitute 68, which is 31% of the total, in contrast to those using deductive approach (25, 12 percent). The comparison of these two styles of research supports our conjecture that induction approach plays a dominant role in research. But Table 8 indicates that the biggest group of papers is categorised in the "descriptive, normative

or prosaic” style, and quasi-deductive research also occupies a considerable proportion. This seems to imply something more. An explanation could be that when the viewpoints (the theoretical tenets) were accepted, their underlying methodology was not necessarily inherited as an accessory. This seems exceptional to the normal situation. In general, a process of accepting a viewpoint is a process of learning the whole context of the viewpoint, and hence the premise, the methodology, the reasoning logic and the like. So when the viewpoint is accepted as a paradigm, the corresponding methodological items, which are partly the premise of the viewpoint in the original logic, should be simultaneously inherited. This leads to the situation that in practice, a paradigm is often *de facto* an element entangled in a paradigm system, and hence the acceptance or rejection of the paradigm is also the acceptance or rejection of the whole context of the paradigm. As implied in our theorisation of the paradigm, this is a reason why Kuhn considers a paradigm as something vague, because he is in a sense confused by the phenomenon that a paradigm performs in a way inextricable with its context. But the formation of a paradigm does not necessarily follow the process by which the knowledge of the paradigm originally arose. For example as we have pointed out, it may simply be due to some sociological factors that an idea becomes a paradigm. In this case, the event of the acceptance of the theoretical tenets itself does not involve the acceptance of the underlying method. So in the field of Chinese urbanisation research, the methodology established through other ways still works. Particularly, attention should be given to idea notion that the other methods, the quasi-deductive, descriptive, normative or “prosaic” styles of research do not conflict with the acceptance of the theoretical tenets given these tenets are problematic. In fact, such work is in a sense incapable of theory attack or construction. Both induction and deduction could lead to systematic knowledge. By contrast, quasi-deduction, descriptive, normative or prosaic work is basically not strictly logical argumentation. Therefore, even if some did not inherit the corresponding methodology when they accept the theoretical tenets, their existing methodological commitments will not threaten the theoretical tenets to be paradigms. In the four types of research, only the deductive approaches could possibly challenge the theoretical tenets if they are

problematic. Besides, there are still some other factors needed, such as inspiration and an appropriate context. All of this will be explored further in a later evaluation of the validity of the methodological paradigms. But from Table 7 it is clear, that compared to the inductive approach, the deductive approach is relatively insignificant.

In conclusion, the empirical evidence suggests the dominance of the induction method in contrast to deduction. But, in terms of common research behaviour, methodologically a large proportion of the work is not strictly a logical exploration. But this style of research does not affect the acceptance of those theoretical tenets. Since this finding is a part of the practical research activity, the other main research methods (styles) will also be assessed in the next section.

6.3 Is the basic research methodology problematic?

The responsibility of Chinese urbanisation research

A method itself cannot be absolutely right or wrong. It is only a tool and is appropriately or inappropriately employed by the user. So to evaluate research methodology is essentially to judge the compatibility between a method and its anticipated research objective. Hence here we will have to firstly clarify what is the anticipated responsibility for Chinese urbanisation research, which actually has been implied in earlier arguments and is an implicit premise for the whole argument so far. Obviously, the responsibility or objective of research is something that has to be arbitrarily defined subject to value judgement. Here we take a classification of Aristotle (cited in Peattie, 1995) as a base, and develop our argument.

In Aristotle, there are three types of knowledge with each serving a specific purpose: *episteme*, represented in English by the derivative “epistemology”, means the knowledge that is universal and can be demonstrated to be true, namely the ideal of

pure science. *Techné*, cognate in English to “technique”, is the knowledge of the art or craft of bring something into being. And *phronesis* (no English equivalent but often translated as prudence) refers to the knowledge of what to do in particular circumstances. Simply, it seems we can understand this classification like this: *episteme* is the knowledge reflecting reality, which must be *true* in the sense of validity and reflecting the reality; *techné* emphasises its derivation from human creativity; and *phronesis* concerns directing behaviour. In other words, *phronesis* is the knowledge teaching people adapting to or/and reforming the reality. It seems that the criterion appraising *phronesis* should be something different from “true”, the criterion of the *episteme*. To evaluate *phronesis*, we may have to employ the criteria involving human value judgement, such as “good”, “appropriate”. In addition, *phronesis* involves the implication for the future, because it is to teach how *to do*.

In light of this, we are aware that the anticipated ideal Chinese urbanisation research should achieve the knowledge of *phronesis*, namely its accomplishment should be able to soundly inform researcher what to do. *Episteme* is not *phronesis* because it does not tell researcher how to do. *Techné* is not *phronesis*, because it does not necessarily relates to specific realistic world. However, *phronesis* is certainly a combination of some *episteme* and some *techné*. *Phronesis* has to be based on the knowledge about the reality, and in the meanwhile might include a reasonable scheme for intervention.

Then, in *phronesis*, what kind of *episteme* and *techné* is demanded? This is also a value-related question. The answer lies on your goal for action. For our case, the ideal research should be able to inform *significant* intervention in urbanisation or urbanisation-related respects. We hope to know some *episteme* that is both significant and long-term oriented (namely, able to acquaint what the future will be, or more accurately, what the tendency is). We hope then that *techné* is compatible with the *episteme*, and established on this premise, is sufficiently innovative. Therefore, the *episteme* of the sort that can only be a record of the current or the past is not the destination for the ideal Chinese urbanisation research. We actually anticipate some

knowledge that tells us of something which is capable of lasting for a long time. In addition, it should be *significant*, a loose word in some sense but one which conveys something essential. Although even on a case-by-case base it is still often difficult to apply such criteria, we know they construct the goal that research aims at. The academic research field should work towards them.

In brief, the two kinds of knowledge that Chinese urbanisation research should be responsible for are significant and permanent knowledge about reality and good plan of action. The former is the base. As mentioned earlier, such criterion have been the implicit premise so far. The evaluation, which follows, as well as the arguments in the next chapter on different research methodologies, continues to be premised by this criterion.

Evaluation of the validity of various basic research methodology

Turn to the induction methodology. First, it seems that such a logic does not imply a “vertical” development, namely from one idea to a new idea. It is the logic for justifying a type of knowledge, or, behind horizontal development of knowledge. That is, induction extends an idea from specific context to general context. The idea is really the same one. So to apply an empirical induction method is to spend most energy on understanding and justifying the truthfulness of existing ideas. In a sense, induction is incapable of knowledge development. This on the other hand means that knowledge based on induction can hardly be systematic. But reality is often complicated and any adequate explanation has to be systematic. This suggests that if the theoretical tenets examined in the previous chapter are mainly inductive knowledge, they are possibly insufficient to explain urbanisation because urbanisation involves complicated factors. This also suggests that knowledge out of induction methodology cannot meet the goal of Chinese urbanisation research proposed in the previous section. Chinese urbanisation research should be sufficiently relevant and competent for action planning. To understand the essence of urbanisation obviously requires continuous and

in-depth exploration, which is a shortcoming of the induction methodology. Meanwhile, frequently good action schemes or solutions are also difficult to discover or devise through one time of inspiration (otherwise perhaps there is little need of research). So induction seems also impotent for scheming good planning. Conversely, to make a valid challenge against these tenets, it seems quite normal for the holders of the traditional wisdom to ask for powerful counter-argumentation (the new argumentation needs to be “more powerful” than the old one). But urbanisation involves systematic relations as shown in our structural conceptualisation, and hence a valid explanation seems inevitably to be a systematic one, which is a shortcoming of induction logic. So pure or mainly induction logic seems insufficient for conducting a challenge of the paradigms in Chinese urbanisation research.

Secondly, in respect of the validity of knowledge drawn from induction, there has long been much criticism by philosophers. As Harvey (1969: 37) notes, many logicians and philosophers (such as Popper) “reject ... (empirical induction’s) use entirely in the presentation of scientific knowledge” because “there is no logical justification for extending belief in the premises to belief in the conclusions”. “The conclusion of inductive reasoning can always be false”(Hume, cited in Morton, 1996: 141). In our context, the deficiency of empirical induction suggests that no theory from this source, whether the Northam curve or the correlation between urbanisation and industrialisation, are necessarily applicable to universal contexts. So they may be not suitable in the circumstance of Chinese urbanisation. Other countries’ experience can only represent themselves. It is not certain that past experience will recur.

However, the weakness of the validity of induction discussed above, which although could never be eliminated, is not necessarily a practical problem. Weakness is innate in any knowledge, because “no propositions for which the ultimate reasons are deductive reasons” (Bambrough, cited in Harvey, 1969: 37). In this study we point out that the ultimate human knowledge is basic knowledge, which is derived from pure inspiration or observation. Such knowledge can never get strict verification, which is similar to

inductive knowledge. Equally, some knowledge can only be achieved through induction. The key point is that, rather than the availability of a strict verification, the unavailability of a falsification is the proof of the validity of inductive knowledge (as for the basic knowledge). Therefore, for inductive knowledge, it is the discovery of counter-evidence that helps filter out the erroneous ideas. The consequence will be, in people's thinking there is still other inductive knowledge or basic knowledge which has the similar weakness as inductive knowledge. But the remaining knowledge is unfalsified and hence presumed valid.

Thus induction or induction of urbanisation phenomenon might be a scientific methodology, but the key is that *the knowledge out of induction cannot be falsified*. That is, a "whole" does embody *all* the same "individuals". And in this case, the application of induction methodology could make study relatively easy, though of course, the result is rather a probability. For example, in recognising the knowledge of urbanisation, as we see from the structural conceptualisation of urbanisation, to achieve an understanding about urbanisation based on genuine causality — the understanding of the causality of urbanisation is equally based on induction — would involve much more complicated relations. It would be too over-complicated to clearly explain how some reasons affect the growth of urbanisation level. But if urbanisation level growth does follow a trajectory based on universal laws, and the trajectory can be identified through a certain induction methodology, then we just need to go to that methodology. Such a context within which the method of empirical induction is valid is philosophically known as "induction-friendly" (Morton, 1996: 143-145). Equally, "induction-friendly" cannot be strictly justified unless the individuals of the body are all tested (but in this case there will be no need of induction). Rather, it is always conversely proved: there is no negative evidence.

Unfortunately, our investigation in the previous chapters does suggest the existence of negative or suspicious evidence for some urbanisation phenomenon — the ones described by the theoretical tenets such as the growth of urbanisation level and the

correlation between city size and quality. Moreover, such evidence appears unexceptional, and, indeed, considerably pervasive. In fact, a vital factor seems the new socio-economic context. That is, even if an urbanisation phenomenon was ever induction-friendly, its continuity could be distorted following the change of the socio-economic factors, the cause of urbanisation. In this case, even if the conventional wisdom was valid in conventional context, it is outmoded today.

This brings another possibility that the change of context may only break the coherence of the related urbanisation phenomenon. But taking the occurrence of the new context as a watershed, the urbanisation phenomenon may continue to be induction-friendly in the new context. In this case the induction methodology is still appropriate. But it should be noted that, people have to draw induction knowledge anew based on empirical evidence under the new context. It is problematic to directly apply conventional conclusion, as well as evidence, to current situation as the current research does. Secondly, since this is a new context, there may not yet be enough empirical evidence. At this rate, the induction methodology is still unable to produce valid new knowledge, for the application of empirical induction demands sufficient evidence. In fact, the possibility that under the new context, the related urbanisation phenomenon is again induction-friendly seems to be small. This is because that the new context seems to keep on dramatically *changing* (this of course does not conflict with the proposal that “it has changed”) rather than to be relatively stable in terms of many urbanisation causal factors. On this occasion even there are still inductive laws, these laws must take more complex forms than the conventional ideas, and the concrete technology of induction will play a vital role in their discovery.

All of this implies the problem of over-relying on an induction strategy and inductive knowledge drawn from the past context. Also, since in the new context the induction methodology might be unable to achieve valid new knowledge, it becomes incapable of challenging the existing knowledge. This is because that very often, an old paradigm can only be abandoned when its substitute is ready. This phenomenon, a

problematic tendency in man's handling of the paradigm, was noticed in Kuhn's theorisation of the paradigm; but as the earlier approach to Kuhn's thesis showed, he misunderstood this phenomenon as substantially inevitable.

When one carries out an inductive study on urbanisation phenomenon, the genuine causality contributing to the evolution of urbanisation seems largely ignored. In this case, the understanding achieved about urbanisation is partial. When the change has happened with the causes of urbanisation, some phenomenal reflection should follow. But with such a phenomenological standpoint, we could lose the opportunity to sensitively catch and predict the potential change in both the causes and the phenomena. Here a deductive approach seems to be particularly needed. In fact, change always happens from the causes. Without conscious concern of the change in the causal respects, one cannot sensitively grasp the phenomenal tendency. This might contradict the common perception because in practical thinking behaviour, many seem able to predict the change with urbanisation based on causal reasons. For example it is noticed that China's economy has been undergoing rapid growth and it is thought that, *consequently*, the urbanisation level will continue a rapid increase. However, such understanding is not based on real causality. The substantial premise for the above inference is something like "industrialisation must be followed by corresponding urbanisation". This is an idea which cannot represent any genuine causality of urbanisation. This is the situation where a paradigm can mislead thinking.

Above is an evaluation of the induction method and the scope of urbanisation phenomenon. The classification of the basic research method meanwhile reveals that there are also some other prominent research styles including the descriptive, normative, "prosaic" and quasi-deductive. With reference to the defined responsibility of Chinese urbanisation research, it can be seen that all of these methods could contribute in some respects, but their shortcomings are also relatively apparent. Here since the "prosaic" style is rather a mixture of other methods, we will not separately evaluate it. For other methods, firstly, valid description will result in some *episteme*.

And such *episteme* could be of the kind which is relatively significant and permanent. But description is impotent in uncovering relatively complex features, nor is it capable of generalising specific knowledge. Both of these require more systematic, in-depth penetration. Therefore, although description or intuitive observation is important and in some occasions is the only method, it is far from enough for discovering the significant and relevant *episteme* which Chinese urbanisation research should discover. Such a feature in the meantime decides the impotency of descriptive study in challenging paradigms if the paradigms are problematic. For example, many paradigms are in nature complex knowledge. Normative discussion can contribute in the respect of action planning, particularly when planning for regulating urbanisation must involve a human ideal. Hence there are places which have to rely on normative argumentation. But, pure normative discussion is similar to the *techne*. The nature of urbanisation determines that *techne* intervening it should be solidly based on relevant *episteme*. Normative discussion cannot result in *episteme* or assessment (either verification or falsification) of existing *episteme*. This again implies that normative discussion is neither capable of challenging problematic paradigms if the paradigms are in nature *episteme*. As for quasi-deductive research, some existing knowledge has been accepted. In this sense such knowledge actually escapes the examination while it could be inappropriate. In other words, many paradigms are actually pre-excluded from examination in such research, and hence cannot be challenged. Of course, given that the premise in quasi-deductive research is valid, such studies could be an efficient way of research.

In brief, knowledge of descriptive, normative or quasi-deductive studies has common features, for example it is relatively superficial, irrelevant to the reality or embracing some un-checked premise. So these types of study are incapable of revealing the problem in some knowledge. This explains the coherence, though in an indirect way, of these methods with other paradigms in Chinese urbanisation research (such as the theoretical tenets uncovered in the previous chapter): they can co-exist peacefully. From another perspective, pursuing these types of study cannot meet the

“responsibility” of Chinese urbanisation research namely to uncover the relatively “significant” and “permanent” knowledge about reality and to suggest “good” planning action. This implies the insufficiency of these methods in terms of their general utilisation in Chinese urbanisation research.

These results complement the earlier evaluation of the induction method in this section, revealing that the dominant methods in Chinese urbanisation research have their shortcomings. These shortcomings underpin the deficiency of some knowledge in Chinese urbanisation research such as the paradigmatic theoretical tenets examined in the previous chapter, because knowledge is discovered, invented or “protected” by these methods. However, it should be born in mind that the evaluation of the methods was in light of the responsibility of Chinese urbanisation research, a pursuit of the academic community. This is to suggest that these dominant methods could produce valuable knowledge. But such knowledge is inadequate in terms of the objective of Chinese urbanisation research. The shortcoming of a method is its incapability in implementing specific objective. The objectives of scientific research set criteria for methods. Sometimes, limitations of methods in this respect did not at once bring about mistakes in theory. For example, in urbanisation research, valid empirical induction might only uncover “laws” that are applicable under strict and complex premises, given that inductive knowledge should satisfy the condition that there is no discovered exception in the “whole” which the “parts” represent. Understandably universal laws, that is, laws which do not need many premises, must be relatively rare in the field of urbanisation research. In other words, inductive achievements in the field should initially have only limited applicability. But since there is an “objective” for the research community which consciously or unconsciously exists in the mind of researchers, researchers may be inclined to extend an idea to an anticipated idea. This process is often based on bold conjecture or probability. But when the extension finishes, the new knowledge, which is not necessarily tenable but of the type fitting the goal knowledge in appearance, may be accepted without recourse to all the premises. This might be the real process by which methods produce problematic knowledge.

After all, the problematic handling of the methods or the knowledge out of the methods could be the underlying reason leading to problematic subsequent ideas. Conversely, if the utilisation of the existing dominant methods are flawless in Chinese urbanisation research, then researchers should be aware that the achievements cannot satisfy the objective of the field.

6.4 Conclusion

This chapter proceeded to examine some methodological paradigms in Chinese urbanisation research. It has been revealed that deduction only occupies a minor position as the basic research method in Chinese urbanisation research. The main methods are inductive, descriptive, normative or quasi-deductive. Among them, logically empirical induction seems the main means contributing to the construction of the theoretical tenets examined in the last chapter. The research scope of urbanisation phenomenon might also have played a vital role in this theoretical construction process. But induction has limits in terms of the depth and validity of the knowledge such research produces. This underpins the shortcomings in the ideas out of induction, such as the paradigms examined in the previous chapter. The other main research styles also have their shortcomings, which determine that they are incapable of challenging the paradigms examined in the previous chapter. However, the insufficiencies of methods do not exclude the possibility that they can lead to valuable knowledge. It is in light of the responsibility or objective of Chinese urbanisation research, to discover the “significant” and “permanent” knowledge of Chinese urbanisation and suggest action plan, that the knowledge based on currently dominant research methods could be inadequate in many ways. In fact, the responsibility for Chinese urbanisation research has been an overall background for the evaluation of its paradigms from the beginning of the investigation.

Since these methodological commitments are the base underpinning the whole

knowledge system in Chinese urbanisation research, that they are problematic is also fundamental for the deficiency of the whole community. So even when some scholars have been conscious of the problems that other paradigms have, without the breakthrough in methodology, these paradigms can hardly be challenged. This implies that a paradigm shift from the very root of the research community has to be anticipated.

PART IV SUGGESTING AN ALTERNATIVE PERSPECTIVE

Chapter 7: The Way to Change: to Go beyond

Urbanisation

7.1 Introduction

The last three chapters have seen a gradually deepening in the examination of various problematic paradigms dominating contemporary Chinese urbanisation research.

These paradigms constitute a paradigm hierarchy, which is rooted in the foundation of the field, systematically influencing the general research activity. This is paramount for the formation, survival and functioning of these paradigms. It explains the “systematic” rationality in support of the problem in Chinese urbanisation research, the key reason leading to that in practical Chinese urbanisation research, the problem has not been well coped with, even though some individual problematic paradigms have been noticed. The study meanwhile implies a vital cause leading to the problematic of existing paradigms, which is the new socio-economic context facing today’s Chinese urbanisation compared with the one from which conventional knowledge of urbanisation derives.

Of course, the study does not suggest that there is no other paradigm or everything is problematic. There are other factors as repeatedly admitted, such as the sociological factors. The investigation seeks to reveal some representative, most essential and

problematic paradigms. Also, it is irrelevant to understand the examined paradigms in an absolute sense and to check the existence and performance of every paradigm in practical research. The result of this study should in some sense be understood as symbolic. In fact, for a social science domain, and for a scientific community which involves many individuals, the development and the acceptance of knowledge may never be cleanly structured and be in a unique and unanimous way. But this obviously by no means changes the rationale that despite knowledge out of the function of human intuition, knowledge develops through the inheritance and development of existing wisdom. *Every member might have his own language or everybody uses the same language but arguably with different meaning.* Despite this, if there is a “group” in time, there must be consensus, and if the group develops, there is almost surely the institutionalised accumulation of a consensus. That is, although consensus often exhibits various concrete forms in individuals which makes an absolute justification hardly available, its existence and the significance to examine it are obvious. So it seems reasonable to involve an attitude of “probability” in assessment of such a study. Conversely, an absolute understanding here might lose the possibility to grasp the essence and the structure of paradigms. Also, it is not true that this study has concluded with an *absolute falsification* of those paradigms. On many occasions the evaluation shows that the validity of paradigms is suspect or inappropriate in terms of particular requirements. This suggests the necessity of a critical view towards them rather than taking them as paradigms as has often happened in the present Chinese urbanisation research.

To further justify the outcome of the paradigms in Chinese urbanisation research from the last three chapters, in this chapter, there will be firstly a schematic survey of the historical clues of those paradigms. The concept of the paradigm after all explains the mechanism of inheriting and the inherited. So any paradigm should have its historical (traditional) source. So if the investigation into Chinese urbanisation is valid, then there should be correspondingly historical clues, and those clues should be found particularly in the disciplinary background of Chinese urbanisation research. It is

beyond the capacity of this work to carry on an elaborate investigation of the disciplinary background of Chinese urbanisation research. Rather, in order to get some further evidence and hence a more in-depth understanding of the problem in the field, it tries to highlight some clues through a brief survey.

After the final verification of the existence and problems of some paradigms, this chapter will proceed to a discussion of the solution. In fact, the interpretation of the problem has hinted towards the way of reform. The nature of the problem highlights that the starting point of the reform should be the basic methodology. So the speculation will begin from the paradigm shift in the respect of the basic method, and then go through the aspects of research scope, research agenda and disciplinary identity. These general points altogether will provide a methodological basis for new Chinese urbanisation research. Finally, some new perspectives for Chinese urbanisation research will be suggested

After theoretically suggesting the “solution” to the problems in Chinese urbanisation research, this study will proceed to application. Echoing the examination of the disciplinary backdrop of the field, some new development in international urban studies exemplifies how the continuous deductive exploration could lead to the progress in research. Meanwhile, some attitude of scholars in Chinese urbanisation research will highlight the lack of such methodology in Chinese urbanisation research.

7.2 The formation, consolidation and obsolescence of conventional paradigms

Since a paradigm is after all the inherited idea, a survey of the historical source of the paradigm should be able to echo the true features of the paradigm. It is beyond the capacity of the thesis to pursue a detailed examination of the disciplinary background of Chinese urbanisation research. Through some schematic overview, the study only

tries to understand some clues.

Geography, specifically human geography or urban geography, and related urban studies in the West are perhaps the main disciplinary source of Chinese urbanisation research. So if our conclusion about the paradigms in Chinese urbanisation research is acceptable, there must be the archetypes in these relevant disciplines. Our survey will be mainly from the respect of the basic research method.

According to Carter (1995, 1-3), until the beginning of the twentieth century, the “research” on the urban had been generally descriptive, namely to picture “urbanisation phenomenon”. Around then, there was a shift from pure empirical description to empirical analysis. The title of Adna Weber’s “classic pioneer work” (as described by Mumford) has been enough to illustrate the nature of the then empirical analysis, which was *The Growth of Cities in the Nineteenth Century: A Study in Statistics* (Weber, 1899, reprinted version, 1963). Detailed statistics and calculation on the urbanisation-related data is the main content of the book. As a result, in this work we can find the approximate forms of many theoretical tenets about urbanisation as examined in Chapter 5, such as the decisive correlation between urbanisation and industrialisation. This may mark the maturity of empirical induction method in urbanisation research. Then, when in 1969 David Harvey was publishing his *Explanation in Geography*, he cited an old criticism that, until the 1940s, “geography ... did not have balance between the empirical-deductive and the theoretical-deductive approaches, but leaned heavily towards the former” (Harvey, 1969, 76). Harvey obviously implies that the old criticism still fits the situation at the end of the 1960s. Harvey’s book is like a manifesto for deductive theoretical construction in geography: he states that “for the 1970s ought to read: ‘By our theories you shall know us’” (*ibid*, 486). Obviously, the long history manifests a well-established tradition of empirical induction (which also naturally affected the research scope) in geography, the large disciplinary background for urban study. It is also possible that many concrete ideas are equally shaped by this classical tradition.

Since then, some dramatic changes have occurred in human geography and urban geography. But in general, these new changes have not produced an essential impact on Chinese urbanisation research. This situation merits speculation and we will examine it more closely later. Here the historical implication is that Chinese urbanisation research formally began in about the middle 1970s, and it seems reasonable to believe that above tradition in Western urban studies or relevant fields were influential on Chinese urbanisation research.

It seems inevitable that a totally external influence will undergo a process of justification if it hopes to be accepted (consciously or unconsciously) popularly. There is obvious evidence that this is the case for some of the paradigms in present Chinese urbanisation research. The sample literature included in this study is published in China and the main contributors are domestic China scholars. For them, the formal beginning of urbanisation research is from the end of the 1970s. The two leading journals from which the sample papers were selected only began in 1977 and 1981. When many “classical” urbanisation ideas were introduced, they were taken with much prudence. For example, the consensus approach towards the certainty and the reasonability of urbanisation has not been explicit then. It is only taken as a possible phenomenon without any particularly “value” connotation as seen in today’s understanding. In the first formal article in *Jingji dili*, which was designed to define the research agenda for China’s economic geography, “urbanisation” in China is put forward as a question:

In last some two centuries, the main tendency of (world) population distribution is to aggregate in cities. The amount as well as the sizes of cities has been increasing. There even appear some megalopolises.... But at the same time, within an individual large city, some residents have been dispersing to the suburbans. Such a combination of general aggregation with partial dispersal, namely the dispersal within aggregation, may appear in our country as well in the future. (Wu, Ch., 1981: 5)

In fact, at that time, it was even common to criticise this phenomenon, which is taken

for granted today, as a sin of capitalism (see for example Kirkby, 1985).

As addressed in the theorisation of the paradigm, paradigms pile up. Except for the most instinctive wisdom, every new paradigm is affected by some existing paradigm. Even facing a new object without a counterpart in intrinsic culture, people will firstly employ existing tools to try to recognise it. And they will not accept the imported idea straightforwardly unless there is something in their culture that believes the imported idea must be better. Usually, when the imported wisdom is accepted, the new paradigm is also a mixture of the imported and the indigenous. At that moment, a paradigmatic idea/consideration in the field is the “planning of productivity distribution” (*shengchanli buju guihua*), the tradition of which can be traced back to the influence of the economic geography of the Soviet Union from early 1950s. Derived from the Marxism and socialist practices, this paradigm proclaims that in some sense people can *arrange* productivity distribution according to their ideal. Researchers should find out the best scheme and use it as the reference for practice (as an example, see Hu *et al*, 1981). This emphasises human intervention. It is in substance divergent from today’s paradigms in Chinese urbanisation research as reviewed earlier, which seems always trying to tag themselves as objective laws that human intervention cannot change.

But gradually, entering perhaps the mid-1980s, new ideas about urbanisation basically were seen very positively as a justification of the experiences of China. This is mainly from some concrete ideas, but the more abstract elements such as methodology and research agenda should also get endorsed at the same time. Cities exhibited the most active energy in economic growth. The achievement of development seems always proportionately marked by the growth of city and the degree and growth speed of urbanisation. The occurrence of “peasantry worker tide” (*mingongchao*) seemingly represented the uncurbable impulse for urbanisation. The size of city also seems to certainly represent some advantages. In such a context, “urbanisation”, attached with the connotation of a quick, certain and law-determined growth trajectory of urban population and expansion of the urban area, becomes accepted more widely. But

compared to today's paradigm cognition on urbanisation, a particular characteristic with China's urbanisation is in that period the dramatic development of small towns. However, this specific characteristic did not really challenge conventional wisdom. Rather, it is conceived to endorse the paradigm ideas seen today. The rapid growth of small towns is seen by many as a compromise between powerful urbanisation impulse and the strict policy constraint over the growth of urban population. That is, it is not the desirable outcome; hence it seems inevitably problematic and therefore assessed as betraying the "objective law". On the one hand, such a development of small towns is followed by huge problems such as pollution, waste and incompetence. On the other, the boom of small towns in the 1980s seemingly faded out very quickly. It has been noted that small towns have been facing problems since perhaps the early 1990s (Wang, H. Y., 1999). For many, these consequences lead to the small-town-urbanisation (or "urbanisation from below") in China has become the counterevidence proving that the prior growth of larger cities in the early stage of urbanisation is inevitable. That is, the relevant orthodoxy is consolidated.

In brief, it is through an unsmooth procedure that conventional ideas on urbanisation were accepted in Chinese urbanisation research (hence work as paradigms). The complexity of this procedure actually strengthened the credibility of these then new paradigms.

Equally understandably, from the very beginning, some traditional Chinese style of presentation/argumentation is explicit in the work on Chinese urbanisation by Chinese domestic scholars, though our detailed study could not go through them all. It is also beyond the capacity here to elaborate a sufficient discussion, but some clues can be boldly put forward. One is that, traditional Chinese style of intelligent thinking seems prone to macro and strategic views. So Chinese scholars may tend to carry out an argument from a macro perspective. This may somewhat reflect the attention to "big issues". But since in nature, big subjects may involve a lot of underlying elements, hence in limited space, the macro and overall view could lead to a very general

argument losing the in-depth clear exploration into any particular detail. Partly due to the first feature, the second feature of traditional Chinese style of thinking seems the lack of skills in analytic logic. In Chinese, “logic” (*luoji*) is an external word. The extremely sophisticated and systematic argument is far less popular in traditional Chinese wisdom. In fact, it is often in terms of a small thing that thorough explanation becomes possible. In some sense, there may be a thought process of “visual thinking” rather than “abstract thinking” and care for “width” more than “depth”. Reflected in methodology, so we can see the previous reviewed descriptive, normative and prosaic methods. The renowned characteristic of Chinese aesthetics is its pursuit after *yijing*, something like the “feeling of beauty” or the “artistic conception”. *Yijing* exists, but is unable to be concretely described.

In short, these are the historical clues supporting our argument about the conventional paradigm in Chinese urbanisation research. The historical context is actually the context for the validity of the historical knowledge if then the knowledge is tenable. So it is not a surprise that the conventional paradigm becomes obsolescent, particularly as the study has implied, when some fundamental changes seem to have happened with the socio-economic situation of China since the end of the 1980s or the beginning of the 1990s.

7.3 The starting point of real change in Chinese urbanisation research

Now the problem in Chinese urbanisation research has been understood, it is time to consider the solution. The substance of the problem implies that the elimination of the problematic paradigms has to involve a systematic effort rather than segmental change. The problematic paradigms at every level should be considered with caution. But if a real change is in anticipation, there has to be a systematic re-construction from the fundamental methodology.

It has been revealed that the most fundamental paradigm for the problem of Chinese urbanisation research lies in the basic methodological commitments, with the core being the induction methodology. So the starting point of a real change is obviously in the change of the basic research methodology and the key seems the introduction of deduction. In terms of the responsibility of Chinese urbanisation research, the current basic methods (induction, description, normative discussion and quasi-deduction) are found to be associated with these potential problems: the incapability of “vertical” development of knowledge, the validity of knowledge being suspect, the lack of in-depth penetration, the irrelevance to reality and the ignorance of problematic theories. But the introduction of deduction would not eliminate these potential problems at once. It is primarily a matter of appropriate understanding of deduction. More importantly, it depends on an efficient and successful utilisation of deduction, which is in a large sense a subjective matter of individual researchers. Here the discussion will be from two aspects: the validity of deductive knowledge and the “vertical” growth of knowledge through deduction.

This first aspect, the validity of deduction knowledge actually has been embodied in our classification of the method of “quasi-deduction”. The vulnerable credibility of inductive knowledge seems to be the main point for many to criticise the inductive method. By contrast, the deductive method seems exclusive of this problem. But this is not true. In fact the valid point of deduction is the *deductive process*: the reasoning from the premises to the conclusions is logically coherent. Deduction is “a kind of reasoning in which you begin with assumptions and show that conclusions follow logically from them, so that *the conclusions have to be true if the premises are*” (Morton, 1996, 463, emphasised by the author). So the key is that, the premise in a deduction may not be true. Therefore, deduction itself has nothing to do with the validity of knowledge it discerns. When it is rightly used, only the coherence of the validity between its conclusion and the premise can be confined. This point implies the first pitfall that should be avoided in research, i.e. the unreliable premise leads to the

unreliable conclusion.

A typical example of this pitfall is to take orthodoxy, whatever an apparently “great” theory, a widely accepted principle or a methodology, as a premise, and then make deductive reasoning. The emergence of “theory” in research seems to often block the way back — scholars forget to check the validation of their theoretical premises. Thus their responsibility to guarantee the truth of conclusion is shirked (perhaps often unconsciously). The real problem is that the researcher may have no consciousness of this. This is obviously not a rare phenomenon, for now it should be explicitly recognised that the existence and working of the problematic paradigm, the central issue examined throughout the study, is exactly this problem. The reason for this being a pitfall is that the nature of the validity of deductive knowledge often seems ignored. The deductive process, as described in the quotation below, seems often mistaken for the totality of a deduction or a successful deduction:

A scientific system consists of a set of hypotheses which form a deductive system; that is, which is arranged in such a way that from some of the hypotheses as premises all the other hypotheses logically follow. The propositions in a deductive system may be considered as being arranged in an order of levels, the hypotheses at the highest level being those which occur as premises in the system, and those at the intermediate levels being those which occur as conclusions of deductions from higher hypotheses and which serves as premises for deductions to lower level hypotheses. (Braithwaite, 1960, cited in Harvey, 1969: 36)

As pointed out earlier, the ultimate basis of any knowledge is the same, and is in nature similar to inductive knowledge. So for a valid deduction, in addition to the valid deductive process, the examination of the premise should also be put on the agenda, and the premise after all has to be some “basic knowledge”, a point has been elaborated in the theory of the paradigm. This matter, the examination of premise, can be called “backward deduction”, the rationale of which is obviously the same as the rationale of knowledge examination addressed in the theory of the paradigm (3.3). So post-facto deduction might involve a series of knowledge dissections and evaluations.

Even where there is no problem with the premise as well as the deductive process,

deduction may still be unsuccessful. There is another potential deduction pitfall, which seems even more implicit. That is, reliable premises, strictly applied and therefore leading to reliable conclusions, but the conclusions are irrelevant: they have no relevance to the questions that really need to be answered.

One typical example could be a theory based on a set of totally ideal premises. These premises could actually never be realised or articulated in reality. Or it might be a study based on case investigation, the conclusion actually heavily relying on the specific contexts of the case. But the contexts are so specific and have little chance of recurring in the future. The third example could be a study which is self-satisfied with its “progress” but the progress actually is divergent or far from the genuine problems. We can say that any inductive conclusion possesses intrinsic deductive logical coherence as long as we give it enough premises. We can also argue that maybe all theories involve ideal premise postulation, so we cannot just complain that any one deduction contains too many premises. In short any research can become theoretically deductive whenever we want. This seems another reason (one is that the ultimate source of deductive knowledge is the same as one of inductive knowledge) why it could be argued that there is no essential difference between induction and deduction.

The merit of deduction is primarily the coherence between premises and conclusions. In addition the validity of deductive knowledge is also confirmed given that the validity of premises examined. But these are different from the relevance of deductive study. Deduction as a tool, like any method, has nothing to do with the relevance of its conclusions. “Relevance” itself is also very loose, and is largely a subjective matter. Science could be autonomous but indifferent to practical issues. It seems mainly a matter of value pursuit of scientists that will decide the relevance of research. So admitting that Chinese urbanisation research seeks to take the responsibility of providing significant knowledge capable of prediction on the subject of Chinese urbanisation, then in addition to the validity of study, researchers have to concern the relevance of their study. In this case, neither “ideal” theory nor “exceptional”

empirical study should be the destination of research. Nor is the analysis isolated from the actual condition of China. But perhaps inevitably there are always such products which work as interim achievements premising further articulation with the actual issues in Chinese urbanisation. The key is that, both the premises and conclusions should be directed towards the really relevant destination (of course, this process should not distort the strictness of the deductive logic). Therefore, successful deduction is often a coherent series of steps. Of course, this is often difficult, for the research object is complicated and embodies less apparently clear and strict relations that can meet the requirements of deduction. So research could become very “scientific” (strict in logic) but less “exciting” (challenging the genuine problem confronting people), a result has to be avoided for a researcher who wants to address real problems.

In such a continuous and deepening process of deduction, it is not just logic but also inspiration of the researcher that will be required. This is the place innovation is really needed. A researcher needs to continuously discover the significant direction (at both the premise and the conclusion ends) in which deduction might be directed.

In conclusion, having penetrated into the nature of deduction, the overall implication is that, unless deduction becomes a continuous process, it will not totally overcome the problems with current methodological commitments. A continuous “deduction process” means that there will be three direction of deductive reasoning: the backward deduction which checks the tenability as well as the relevance of premise, deduction from premise to conclusion, and forward deduction to pursue more relevant conclusions. In fact, both the backward and forward deduction also involve their own deductive process from their premise to conclusion. The success of deductive process on the one hand relies on the strictness of every deductive step, and on the other requires innovative inspiration to find the significant, as well as feasible, direction. The final point is that, in a “deductive process”, there will be still other methods. The reform of basic methodology is neither a total replacement nor a matter of balance. It is

to locate every method in its position.

7.4 Studying Chinese urbanisation: to go beyond urbanisation

With the new methodology, the study of Chinese urbanisation comes to the fore. A consequent question might be that, with the new methodology, where should the study begin. This is a question of the research agenda: what should be studied? In fact, the anticipation of research agenda is very often essentially the anticipation of a practical and rewarding research strategy. When such a strategy can be put forward, to a certain degree, half of the research has been finished. This is obviously not the case for this research. There seems something true in such anticipation. But from another perspective, do we really need a research agenda, as in contemporary Chinese urbanisation research, with some favoured themes? Is it really a premise for an efficient and relevant research program to carefully select a “significant” research topic?

We might be accustomed to selecting a “good” topic, and we think that a good research topic would basically lead to a good research achievement. But a “research topic” is a very special concept. That is, to a certain extent any research topic essentially covers infinite research content. In terms of practical research behaviour, the “instruction” a research topic can inform is actually very limited. On the other hand, perhaps starting from any point, significant and relevant destinations could be reached. The vehicle is a valid *and* significant “deduction process” proposed above. The same vehicle of any serious research achievement. Starting from any problem challenging Chinese urbanisation and aiming at the solution of the problem, an adequate deductive process must be able to eventually lead to valuable research achievements. This point is perhaps more essential. A significant topic is not so much a starting point as an outcome of significant research.

When a deductive process strategy is applied in studying Chinese urbanisation, the research scope will naturally be broadened. Researchers should cover the genuine causality of the urbanisation process. But is the field of Chinese urbanisation research capable of such a comprehensive approach? From the structural conceptualisation of urbanisation (6.2), it should be understood that a thorough understanding of urbanisation involves sophisticated factors and relations. This will also intervene in many fields, basically belonging to different scientific communities. And meanwhile, will such a transformation eliminate the identity of this “field”?

The complexity of the causality involved in urbanisation process seems a reason leading to the phenomenological scope in urbanisation research. In practice this seems a difficulty for the broadening of the research scope or the application of deduction in Chinese urbanisation research. However, sufficient deduction does not mean infinite deduction, otherwise no research can be completed. Each individual research item is aimed at a “small” research question. Many individual research items then collectively comprehend a “big” issue. Since every individual research project must be feasible, the researcher has to finally set a limit to the depth of deduction to be involved. So there basically have to be arbitrarily defined premises in research that are unable to be specifically addressed. Meanwhile, the extrapolation will normally be conducted to only a certain depth, where the focused question gets a satisfactory answer (though this is quite subjective criterion). It is the nature of the focused research question along with the researchers’ pursuit to the final outcome that will determine the whole work. But in any case, it should be obvious that the research should aim to cope with the problems with Chinese urbanisation rather than any disciplinary goal.

Thus after such fundamental methodological shift, the original identity of Chinese urbanisation research might be weakened. There will be still a group of research activity that particularly concerns a series of spatial transformation. That kind of spatial transformation is normally the starting point of a study and the final destination of the whole argument. Except that, the concrete research will only follow the

principle of a deductive process. That principle may lead the whole research to something like today's management study, macroeconomics, or something else. In other words, the new Chinese urbanisation research will represent all *valid* explorations into the issues relating to a specific process. Such exploration inevitably will be multi-dimensional and multi-disciplinary. In fact, even the description of "multi-disciplinary" could be misleading. This may produce the impression that we are encouraging inter-disciplinary co-operation, like borrowing the theory or methodology of macroeconomics to study urbanisation. But the appropriate interpretation seems that any feature of the new Chinese urbanisation research is only the external appearance of the internal logical exploration on the esoteric of that specific process in China. The demand of that exploration will determine its disciplinary characteristic²¹. Here, the argument suggests the possibility, as well as the need, to go beyond urbanisation.

Associated with the shift of the epistemological commitments should be the new perspectives about Chinese urbanisation and Chinese urbanisation research. With all the fetters broken, the new perspectives are also to go beyond the orthodoxy of urbanisation. In fact, the identity of language seems to often conceal the possible plurality of the meaning that words can represent. Mistaken ideas may therefore become ambiguous. Urbanisation, above all, is a phenomenon. It is, and therefore should be understood as, the consequence of socio-economic movements (not necessarily "development", which has now been attached with too much sense of positive progress). It changes with the change of socio-economic contexts.

Consequently, if there is any law of urbanisation, logically it is rather the law of the socio-economic movements. Any claim of an urbanisation law separate from its corresponding socio-economic laws is incredible. However, as represented by the paradigms revealed in the study, conventional wisdom of urbanisation seems to have

²¹ Similarly, from the stance of this thesis, it is insignificant to cling to "disciplines" such as insisting the border of a discipline. There is never inherent classification of disciplines. It is the hindsight review superficially defining disciplines. This does not change at all that the nature of any discipline is only the external appearance of valid exploration.

lifted the term “urbanisation” to a height it cannot reach. Urbanisation seems no longer an auxiliary and subsequent matter, but entrusted with autonomy and, vitality. But in its purest and most crude meaning, *urbanisation has no vitality*. Terms like urban and rural can be viewed in a similar manner. These terms in the common language seem to have lost the meanings they should have, and hence are misreading, distorting the nature of the subjects they are intended to describe (urbanisation, urban or rural). It is said that urban or urbanisation research of the recent century has successfully brought to public attention the issues of urbanisation (see for example a comment on the contribution of Lewis Mumford by Fischer, 2001). But it would go to another extreme if such attention were drawn through exaggerating the significance of urban or urbanisation. It is time to break through the paradigms of urbanisation. Returning to the origin of relevant concepts, one may then be able to develop a perspective better understanding the *new* phenomena of urban and urbanisation in this era and imagining the future urbanisation based on the departure point of the present. In this context,

i) It should be time to abandon the kind of research restrained within the phenomena of urbanisation and continuing to outputting further a vague image of the future of urbanisation. Instead we should analyse how current economic movement, policy regulation, technological progress and cultural shift are influencing urbanisation, and how the change of urbanisation is conversely producing new opportunities as well as challenges for development. If Chinese urbanisation research seeks to influence such a process, then urbanisation phenomenon seems only appropriate to be an intermediate link in research, helping to illuminate the socio-economic movement behind the phenomena. In fact, the happening of any specific urbanisation phenomenon in China, including the speeding up tendency, is always theoretically possible. But this has to be examined from the features of the underlying causes of Chinese urbanisation.

ii) It should be time to put aside the traditional dichotomy of urban versus rural, but think about the appropriate spatial patterns of human settlements in the light of certain principles like health, humanity, accessibility, sustainability, convenience and the like.

These principles are no longer attached to one particular sort of settlement.

iii) It should be time to alter the heavy leaning towards the long-term prediction of urban population growth and spatial evolution following the so-called laws of urbanisation, a job seeming inevitable for planning in present China. Instead, we should speculate how we can make urban and regional planning capable of being reflective and flexible to the changing nature of socio-economic development. Both high competition and high creativity of today's human society are making the trajectory of development richer in terms of its dynamic rather than static characteristics. Therefore, compared to the situation decades ago, in general the relevance of long-term projection has to be more like a strategic vision rather than tactical guidance. This is obviously not to deny the possibility of prediction. Planning always involves prediction. Rather, the contextual change makes some of the long-term prediction less reliable. In this case, an alternative is to substitute the continuous and successive short-term projection for long-term ones. We should focus on the aspects that can be planned and leave the potential alternatives for practice. This does not necessarily mean that planning has covered too much. Rather, planning should cover the right things.

iv) As to urbanisation in present China, it seems to be becoming a specific process. The distinction is not the spectacular scale of the involved population and space of Chinese urbanisation, but lies in the fact that urbanisation in China is being intentionally and orderly created. Urbanisation has become one of the policies pushing economic development, a starting point rather than a consequence of development. Urbanisation is regarded as a new impetus of economic development, for rapid urbanisation will drastically promote consumption and demand, and hence will help to deal with deflation and some other economic problems. Such a positive handling of urbanisation seems different from the concept in conventional wisdom, which in nature is an auxiliary and subsequent phenomenon of socio-economic development (there is misreading of the concept of urbanisation in practice, but the misreading does

not affect the essential role of urbanisation in reality). This also seems different from general experiences such as the urban-bias in many countries or the practice of urban planning. However, the essence of this “urbanisation”, a part of the economic effort to increase consumption and henceforth push economic growth, is rather the collective term of the creativity of human anticipation and aspiration of the urban style of life, and henceforth the promotion of urbanisation-oriented consumption and demand. Such a new concept of urbanisation should be a new point of departure for Chinese urbanisation research.

In brief, these could be the directions for really relevant and significant Chinese urbanisation research. Again, all of these directions highlight the need to go beyond urbanisation in the traditional sense. Change in research is being urged by the advance of practice in China.

7.5 Implications from the recent evolution of international urban studies

Here the analysis of the recent evolution of international urban studies will exemplify some general points in the light of the above argument. Given that international urban study is originally the disciplinary backdrop and has influenced the formation of Chinese urbanisation research, an interesting phenomenon is that not long after the formal beginning of Chinese urbanisation research, the influence seems to have totally disappeared. This phenomenon is worth examination, for it reflects the rationale of the paradigm and paradigm shift. For many Chinese urbanisation researchers, their attitude towards the divergence between the two parallel research fields is partly a sign of their conventional paradigms. For the shift in international urban studies, no matter how complex it appears, there is clear underlying logic, which is the commitment to continuous deductive exploration.

Methodologically international urban studies have dramatically changed since the end of the 1960s. Following Harvey's declamation of theory construction, urban studies saw the emergence of various schools, with the most important including the quantitative approach, the behavioural approach and the radical approach (Carter, 1995). But that is not all. The change continues. More recently, Carter finds that the development of international urban studies has become more like "an amalgam", which is extremely multi-dimensional. For Carter, it is more difficult to find out or define a mainstream topic or theory or methodology in relevant academic behaviour and this situation makes him a little bit obsessed. Among the various approaches or topics, relating to urbanisation in the third world, some impressive current topics or approaches include the radical approach, the informal sector and governance (which will be discussed in some detail later). However basically, such transformation has not seriously impacted upon Chinese urbanisation research as the sample literature reviewed earlier shows. Chinese urbanisation research seems largely stuck to the

legacy of some previous characteristics.

A common reason that researchers like to use to interpret such a divergence is that Chinese urbanisation research has no need to follow the external changes. For example, it is contested that “urban development in China lags behind that of developed countries” (Zhou, Y., 1998), therefore old style of research with reference to Western countries may still be relevant to China. Our investigation also illustrates that the actual process of urbanisation in China did justify classical theoretical ideas in some periods, such as the 1980s. But there seem other more essential reasons. Firstly, the existing paradigm will “instinctively” reject any new paradigm-candidate. This is the inertia aspect of human thought, a vital point in the mechanism of paradigm. Secondly, the conventional paradigm of Chinese urbanisation research possesses few elements which would lead to self-denial or development as our evaluation shows, which seems an obstacle of innovation. The weakness of its deductive methodology should be a vital reason for the defence of conventional wisdom.

Indeed, the recent evolution of international urban studies does seem to embrace some elements that should be relevant to Chinese urbanisation research. Much change in international urban studies seems obviously based on continuous deductive exploration. If researchers commit their thinking to continuous deduction, the occurrence of those new approaches or topics in study of urbanisation will be a natural consequence. So if there is the same process of speculation, Chinese urbanisation research should find the relevance to China of some topics in international urban studies. More importantly, such thinking is the way for Chinese urbanisation research to achieve its own autonomously healthy development, and the consequence of that development should in many places be different from international urban studies because of China’s own condition. Here we exemplify three current approaches or topics in international urban studies relating to the third world and analyse the underlying logic contributing to their occurrence.

One is the radical approach (also named as structuralism Marxism or neo-Marxist approach). This approach expands the political economics thesis of Marxism and holds that the artificial landscape is the spatial expropriation of internal production relationship and consider urbanisation as a process of spatial capitalisation (see for example Harvey, 1985; Armstrong *et al*, 1985; Castells, 2002). For the countries of the third world, urbanisation is only a link to “help” them stay in the third world. The urbanisation they are experiencing is a process by which they are exploited by world capitalism. Large cities are the most important bridgeheads of monopoly capital. Local institutions are the representatives of transnational capitals. According to the argument by Armstrong *et al* (1985), transnational and local capitals collude to create and maintain the co-existence of the convergence in consumption and the divergence in production. This stimulates the “development” in backward areas but also guarantees the inevitability of their being explored. Since even in the most isolated places, residents would like to believe that Coca-Cola is better than water. They “volunteer” to devalue the “preliminary” products they can produce and exchange the over-priced so-called high-value-added products. The poor try their best to produce their devalued products as much as possible to import “development”, which effectively helps the realisation of continuous capital accumulation and the reinforcement of the exploiting capability of the capital. During this mechanism, the large city in the developing world is the “theatre of (capital) accumulation”. It disperses the consumption patterns through importing capitalism products and rips off the opportunity of self-development in marginal areas through controlling capital and productivity. Smith (1996) also develops a similar approach. Besides, some different concepts are also depicting the essentially similar idea such as the “neo-colonialism”. Basically, the radical approach eventually leads to two implications for action. One is the “radical” anticipation, which believes the certainty of a revolutionary future. A writer ever writes, there must be a day to turn the world upside down. Another is to acknowledge that such a situation is unchangeable and rather a premise for considering the evolution of urbanisation in the third world. For example, the author would like to argue that T. G. McGee’s attitude towards the large cities in the third world (such as McGee, 1998)

reflects such an emotion.

For the radical approach towards urbanisation, despite its validity, it firstly represents a deepening of the understanding of urbanisation from the superficial phenomena to the inner structure. It reflects an awareness that urbanisation is the outcome of a socio-economic movement. So understanding urbanisation must be based on the understanding the underlying socio-economic movement. So given that Marxism is an important theory profoundly interpreting the operation of the whole system of capitalism, it is natural for many to refer to it. Furthermore, due to the coherent relation between urbanisation phenomenon and socio-economic system, not surprisingly Marxism does seem to have exhibited strong heuristic power in urbanisation research. Such a logical development from urbanisation phenomenon to socio-economic movement undoubtedly seems relevant to any urbanisation research.

The second example is the study of “informal sector”. As introduced by (Mabogunje, 1995), it was a 1972 seminar report of the International Labour Organisation which brought the importance of the sector to the attention of policy-makers. In that report, the informal sector is defined as “a way of doing things” exactly opposite to the formal sector. It is characterised by seven features: ease of entry, reliance of indigenous resources, family ownership of enterprises, small scale of operations, labour-intensive and adapted technology, skills acquired outside the formal school system, and unregulated and competitive markets. Many scholars now believe that the occurrence and existence of informal sector has its certainty. This part of the economy is vital to survive urban development or even to the whole society in the third world. Traditional criteria to classify, plan, manage and develop national economy have been outmoded, or need to be fundamentally amended. Issues in research include how to regard the informal sector and how to co-ordinate its relationship with the protagonist of the modern economy, the formal sector, etc. Many scholars and organisations are devoted to study how to “formalise”, namely modernise and legitimatise, the informal sector. But this is more and more considered as impossible.

For the study of informal sector, since at the micro scope, the most direct impetus of urbanisation seems employment, the concern of this topic is inevitable for one who seeks to validly deal with issues in urbanisation. Employment seems always a problem. Particularly in our time, demand for employees seems to be decreasing due to the improvement of technology and management. In fact, theoretically the improvement of production efficiency could continuously speed up. By contrast the growth of demand is relatively slow. In this context, understanding and predicting the evolution of urbanisation has to turn to alternative sources of employment and the informal sector is noticed as a means to fill the gap. The effect of employment on urbanisation is real in any place. The above issue of employment seems also real in any place. So the occurrence of related theme is inevitable for an accurate understanding of urbanisation.

The third example is the study of “governance”. The core of this approach is to conceive that urban development, urbanisation and the solution of problems cannot merely rely on the regulation, administration and investment of the government. Governance is “a broader, more inclusive notion than government” and “the general manner in which a people is governed. It can apply to the formal structures of government as well as to the myriad institutions and groups which compose civil society in any nation” (Conference report of Governance in Africa Program, 1989, cited in McCarney *et al*, 1995). In a series of relations between the traditional sense of administrator and the administrated like government versus society and central government versus local government, it is proclaimed that more attention should be paid to the latter, the partner normally understood as inactive. By contrast, that part, by its own institutions, being validly engaged in the process of decision-making and action, a better governance will be realised to effectively push development. “Governance does not pre-judge the locus or character of real decisional authority” (Lofchie, 1989, cited in McCarney *et al*, 1995). So it is wrong to equate good governance with good government. By contrast, the governance thesis concerns the

reasons and measurements to empower civil society.

This approach of governance could also be a natural product of in-depth deductive exploration into urbanisation. When it is recognised that urbanisation phenomenon is largely shaped by human action, then there is the base for the speculation of human intervention in urbanisation process. Urban planning, relocation of economic, social and political resources, etc are all traditional means which actually affects urbanisation. But many changes of our era have produced a lot of difficulties for such measures. Firstly, the collectively controlled resources appear always insufficient in the face of demand. Secondly, due to unprecedentedly serious competition, redistribution of one or several resources often seems incapable of solving any real problem. Finally, in this volatile, postmodernity era (Harvey, 1990), any plan may very soon be found inappropriate. A few brains seem incompetent to handle the exploding information and dramatic changes. All of these issues bring about a question of more efficient means of human intervention into urbanisation. Under such a situation governance seems to offer a reasonably supplementary alternative. That is to suppose to involve the wisdom and energy of every individual. A campaign is needed to stimulate and take advantage of the talents of each actor. So the occurrence of this concept is also a logical advance.

It is not to say that the above approaches or topics definitely fit Chinese urbanisation research. Nor is it evaluated whether such approaches or topics are valid. But the analysis demonstrates that there is some logic which can interpret the development of these approaches. This is the logic of the continuous deductive exploration. In this process of exploration, the socio-economic conditions and issues, and academic questions seem to naturally lead to the emergence of these approaches or the change of urban studies. The fact is, most of the related socio-economic conditions and issues seem also contemporary in today's China. And the related academic questions should be equally relevant to Chinese scholars. In this case, if we accept the reasonability of

the continuous deductive exploration, then rather than simply rejecting the new paradigms in the international urban studies, perhaps we have to admit that they may be equally acceptable to Chinese urbanisation research. But the latter is not most important. The most important point is that, the above review illustrates an example how continuous deductive thinking leads to the research progress. Only with the same commitment, Chinese urbanisation research could achieve its own valid advance. For the above new perspectives in international urban studies, whether they are indeed relevant to China also needs to be evaluated through effective deductive analysis. The above review also illustrates the essence of paradigm shift. That is, rather than an absolute breach, paradigm shift could be a kind of inherent development. In the above reviewed development in international urban studies, the very initial point of departure of the research community seems to remain, i.e. to understand development.

7.6 Conclusion

In this chapter, an overview of the disciplinary backdrop and the evolution of Chinese urbanisation research firstly revealed some clues which endorse the conclusion of the paradigms. Then for the paradigm shift, a systematic reform is anticipated. The starting point should be the basic methodological commitment of research behaviour. Here the key issue is the introduction of a deductive methodology, though it should not totally take the place of other methods. Deduction should be a continuous process, which involves three direction of deductive reasoning: backward deduction checking the tenability of premise and pursuing the most relevant premise, deduction from premise to conclusion, and forward deduction to pursue more relevant conclusion. The success of this process on the one hand relies on the strictness of every deductive step. On the other, it requires the innovative inspiration to find the significant as well as feasible direction. The sufficiently deductive Chinese urbanisation research will lead to the weakening of the disciplinary characteristic of the field. In a sense, research should go where it can go. Around the relevant problem to explore and organise

relevant knowledge will be the solution. The shift in aspect of the fundamental methodology of Chinese urbanisation research will also lead to new concrete perspectives of Chinese urbanisation and its research. These were touched on at the end of section 7.4. The entire argument of the study implies the need to go beyond urbanisation, the conventional wisdom of a specific spatial phenomenon. Some development in international urban studies exemplifies the application of the methodology this thesis suggests.

Chapter 8: Conclusion

The fact is simply that basically, human beings are always prisoners of their traditions. But mankind is never predetermined to be a prisoner of any specific tradition. He should only be the prisoner of the right tradition, truthful knowledge. However, today human beings seem sometimes convinced that they possess the originator of truthful knowledge, science. So we are probably more accustomed to staying in the tradition provided by science, but scientific knowledge actually does not possess a distinguished nature separate from all common knowledge.

But even if there is awareness that tradition of any nature could be wrong, the identification of wrong traditions is not necessarily very easy. This is because virtually all knowledge retained by us is tradition and hence a candidate that should be examined if we want to keep the validity of our thinking. So there might be many traditions need to be identified at a time and while some traditions are easily ignored. On the other hand, in most cases, the estimation of tradition has to rely on other traditional knowledge, whilst the validity of that knowledge could also be an issue. So the identification of wrong traditions may involve a complicated process. But the rationale for the evaluation of tradition, virtually the same as the evaluation of knowledge, is clear. Within the rationale, most importantly, abandoning any particular knowledge, our capability of making judgements, the most basic principle of logic, is

the ultimate judge.

In accepting this common sense and applying it to the present situation of Chinese urbanisation research represented by two hundred and eighteen papers, this research explored the concrete problems associated with the tradition of this body of knowledge, and finally suggested a route to reform are what this study has been about. In a routinely technological narrative, we review the extent to which the research has succeeded in resolving the original aims and objectives. These are systematically reviewed below:

i) A new theorisation of the paradigm is developed as a theoretical base for the investigation into Chinese urbanisation research

In this thesis, the starting point is not the paradigm but a fundamental concern that research about urbanisation in China could be fundamentally flawed. This led to an investigation into the nature of the concept of the paradigm and the establishment of a framework of paradigm exploration to identify the problem of Chinese urbanisation research. A paradigm is, by nature, a piece of recurrent truth in thinking. This simple essence is however the source of all the esoteric characteristics of the tradition in thinking, including scientific thinking.

Except for very specific occasion, people always have to rely on paradigms, which tell what they know and are the premises for intellectual progress. Noticeably, some paradigms are shared by a group, but this phenomenon by no means represents the different nature of paradigms. Rather, it is because truthful knowledge should be retained for appropriate contexts. It seems that paradigms are, in various forms — theories, habits, cultural commitments or scientific achievements, but these forms are rather the bearers of paradigms. Paradigms after all, are ideas. To recognise paradigms often requires a detachment from their concrete bearers, and this process could be difficult. But paradigms still have different forms. Since knowledge ranges in

complexity, some paradigms are simple whilst others systematic. Complicated paradigms are even more difficult to entirely understand, particularly if they have to be firstly detached from their carriers. But no matter how sophisticated paradigms might be, all can be interpreted into common sense types of knowledge. After all, knowledge grows from basic facts, axioms and necessary value judgements.

The various surviving states of paradigms and the complexity of some paradigms contribute to one key issue in the mechanism of the paradigm: in practice, paradigms could actually be erroneous whilst the identification of false paradigms could be an extremely difficult business. Because the consequence of knowledge development is actually the establishment of paradigm systems, even where there is an error, the error could be institutionalised. Therefore the entire understanding, and henceforth, the elimination of an error may need a systematic investigation. But the character of the paradigm also implies a basic rationale leading to the *real* identification of problematic paradigms. Through knowledge dissection, which will lead to the access to basic knowledge, the problematic paradigms and the ultimate (but not the unique) source appraising these paradigms can be identified.

ii) A problematic paradigm institution in Chinese urbanisation research is identified through stratified investigation

Guided by the paradigm thesis, a series of problematic paradigms in Chinese urbanisation research is identified. These problematic paradigms involve; the expectation of a speeding up tendency for urbanisation in China; the preference of several research themes, such as the overall growth tendency of urban population, the optimal sizes of urban settlements and the optimal grouping of urban settlements; the tenets that urbanisation is a concomitant of development and industrialisation, the urban population growth trajectory follows certain laws, and urbanisation follows spatial laws such as the size hierarchy of urban settlements; methodological commitments to inductive, descriptive, normative and quasi-deductive styles of

studies; and; the research scope of urbanisation phenomenon. These paradigms are *de facto* in a hierarchy. The basic methodological commitments lie at the lowest level of the paradigm hierarchy, and is influential for the formation of all subsequent paradigms. Theoretical tenets are directly based on such methods. They then work as part of the premises of the applied implications such as the accelerating urbanisation approach and the “research agenda”. Such a logical interdependence integrates all the individual paradigms into one systematic paradigm of the knowledge community of Chinese urbanisation research.

iii) The extent to which the identified paradigms are dominant in Chinese urbanisation research is evaluated in the sample papers

The existence and dominance of the paradigms are justified through a literature review of the sample papers. Wherever possible, the results of literature reviews are quantified to reflect the general distribution of relevant ideas, giving a more direct indication of the extent to which the paradigms are dominant. For example, in terms of the accelerating urbanisation approach, it is discovered that 35% (76) of the 218 sample papers relate to the idea. More importantly, among the 76 papers, 79% hold a supportive stance in contrast to 21% which are sceptical or neutral. This suggests the dominance of this idea amongst scholars. The distribution of research themes is also calculated, showing that in all sample papers with an identifiable specialised research topic, two thirds of the papers pursue three research topics. This reflects the degree of concentration of research topics in several particular aspects. The study also calculates the distribution of basic research methodology of the sample papers. With a four-class classification system, induction, deduction, quasi-deduction, and descriptive/normative/prosaic, the distribution is 68:25:35:90, which shows the limited degree of deductive research.

iv) The extent to which the paradigms are problematic is evaluated.

The respective assessments of each idea's validity takes place in Chapters 4, 5 and 6. The accelerating urbanisation approach is found not to fit the reality of the urbanisation process in China, which makes one question the validity of the concept. The current research agenda arguably ignores some relevant research issues and shows little sign of research advancement. The idea that urbanisation is a concomitant of development obviously has conceptual looseness due to the difficulty of definitions for terms such as "urban" or "urban population". More vagueness lies in the question of time frames, and definition of the region, for urbanisation essentially embodies "unevenness". As for the idea that urbanisation is a concomitant of industrialisation, the changing pattern of employment seems to fundamentally shake the correlation between urbanisation and industrialisation. As to the spatial patterns of urbanisation, current theorisations obviously over-simplify the actual spatial changes of urbanisation. The actual spatial process involves far more sophisticated variables than any current theorisation suggests. Relevant theorisations as systematic simplification, does not so much provide ideal models for the practical urbanisation process to follow or to provide complete pictures of the process, but highlights the role and interaction of the limited variables covered by them. As to the various methods which dominate in research, their weakness lies in the validity of knowledge they produce and their capability to generate new knowledge.

These conclusions are derived from the individual evaluations of the paradigms. Identification of the paradigm hierarchy, systematically undertaken in Chapters 4, 5 and 6, provides further evaluation of the extent to which the paradigms are problematic. Since paradigms function in a logical hierarchy, the problems of deeper level paradigms can partly explain the problems associated with superficial level paradigms.

v) The way leading to an alternative approach is suggested, with some specific basic methodological principles being defined and new aspects for research identified

Before proceeding to the discussion of “solution”, the study introduced a brief analysis of the history of development of Chinese urbanisation research, highlighting some symptoms endorsing the existence and the obsolescence of the examined paradigms.

As for the “solution” to problems of Chinese urbanisation research, a core finding of this study is to have revealed a problematic paradigm institution. This is an important implication for reform. That is, carefully considering every problematic paradigm, and incorporating an integrated and systematic approach are essential to a real change. The problematic paradigms uncovered are logically interconnected. The problem of this field exhibits itself in superficial knowledge, but is fundamentally rooted in the whole institution.

Secondly, the starting point for change in Chinese urbanisation research is revising the basic research methodology. Chinese urbanisation research should become an activity which is problem-oriented and based on a deductive process. “Problem-oriented” means that the objective of research is primarily addressing the problems in Chinese urbanisation process, rather than any topic defined by theory. A deductive process suggests the application of deduction should in a continuous process: “backward deduction” checking the validity of research premise and pursuing the most relevant premises, deduction from premise to conclusion, and “forward deduction” to pursue more relevant research destination. This methodology requires both the insistence to the strictness of research and the pursuit of sociologically relevant research objectives are important. In this process, inspiration is always a key element since any idea development in deduction, either backward or forward, is first of all through inspiration. The introduction of deduction does not take the place of other methods. For example deduction and induction have to be complementary. The destination of deduction is the beginning of induction: where deduction cannot proceed, either due to

logical reasons or due to the feasibility within research, then induction has to be introduced.

Problem-oriented and sufficiently deductive Chinese urbanisation research will blur the disciplinary identity of this research domain. The responsibility of pursuing the solution to genuine problems may leads research to be classed as geographical research, economic research, or political research.

Associated with the shift in epistemological commitments should be the new perspectives about Chinese urbanisation and Chinese urbanisation research. The study demonstrates four points:

- The need to leave behind the conventional commitments to urbanisation, but pay more attention to the spatial implications of the current economic movement, policy regulation, technological progress and cultural shift, and conversely the way in which the spatial shift produces new opportunities as well as challenges for development.
- The need to leave behind the traditional dichotomy of urban versus rural, but reconsider the appropriate spatial patterns of human settlements in light of the principles such as public health, humanity, accessibility and environmental sustainability.
- The need to leave behind the seemingly practical long-term prediction of urban population growth and spatial evolution following the so-called laws of urbanisation, moving the emphasis to speculation about the means of urban planning, which in nature is designed for short-term application but more capable of being reflective and flexible to the changing nature of socio-economic context.
- Urbanisation in present China actually seems becoming a process distinguished

from conventional wisdom in the sense that urbanisation is being intentionally and hopefully, orderly created. Urbanisation has become one of the *positive* elements pushing socio-economic development, rather than an auxiliary and consequential phenomenon. This distinction, and hence its implementation, success and failure will be a point arousing new Chinese urbanisation research.

This analysis implies that there is a need of going beyond urbanisation, in sense that this term has become a symbol of the methodological base of the conventional wisdom of urbanisation. The definition of this concept, the basic view of urbanisation, the distinguishment between urban and rural, such most fundamental and apparently common sense aspects in current understandings are vital and have to be transcended in order to develop a new, effective perspective.

The research finally surveyed some recent development in international urban studies, which provides a platform understanding some of the conclusions of the solution. It concludes that the reviewed recent development in international urban studies could be explained as the logical output from continuous deductive contemplation.

Particularly, since there are similar conditions and issues underlying the supposed deductive process, the sufficient deductive penetration might lead to the same development in Chinese urbanisation research. Such a capable-of-upgrade methodology, though it is after all the combination of common sense principles of human thinking, is worth the most attention.

One point concerning the findings of the study is that, it would be inappropriate to understand the findings of this study in an absolute sense, to argue whether those paradigms and the paradigm structure are what practitioners of Chinese urbanisation research exactly hold. This is not what this study implies. Rather, since knowledge development always follows the path of paradigm accumulation, for a developed knowledge community, there must *de facto* a knowledge hierarchy. But in practice, the generation, development and accumulation of knowledge is not necessarily cleanly

structured. In this case, the research object is a scientific community and this community is of social science. Within such a scientific community, there may never really exist a unanimous set of ideas and a tidy structure. But this does not change the fact that there are still paradigms and the knowledge development of the field is still based on the accumulation of paradigms. The paradigms need to be grasped from substance rather than apparent forms. This is the focus of this study. The paradigms and the paradigm hierarchy discovered in this study should be understood as a symbolic and schematic depiction of actual Chinese urbanisation research (this is perhaps the possible outcome of any similar investigation).

Compared to existing knowledge, as far as this study is concerned, there are hopefully new contributions:

Firstly, the study identifies the inadequacy in the Kuhnian paradigm thesis and its subsequent development. As a solution, a new concept of the paradigm is defined, followed by an elaboration of the paradigm mechanism and the implications for application. This new theorisation provides an alternative systematic view of the rationale by which knowledge originates and develops, about how mistakes can occur and be recognised, and specifically, of the nature of tradition.

Secondly, as one of limited number of methodological approaches towards Chinese urbanisation research, the study reveals that in this field, specifically drawn from the evidence offered by the examined papers, there are some *fundamental* and *systematic* methodological problems, which relate to the basic epistemological commitment. The concrete content of this problem, the concrete problematic paradigms and their systematic interconnections in the knowledge community are laid out. The study interprets the rational nature of this problem, by the provision of the theorisation of the paradigm. It suggests that superficial, part or non-integrated efforts cannot produce a real change.

Thirdly, the way leading to reform in terms of the problematic research activity in Chinese urbanisation research is discussed, with potential methodological pitfalls identified and possible solutions suggested. Some potential threads of a new research agenda are also provided.

There were places where the author felt there should be a more detailed and more precise examination. Unfortunately due to the limitation of time and energy, this has not been possible. A particular issue is the historical overview of the development of this research field in Chapter 7. A more detailed examination of the classical research, theories and textbooks in the field and their influence on subsequent development would be more persuasive, even though the analysis almost inevitably has to be very qualitative and the logical development has to involve approximation. Also, a more detailed review of the recent developments in near or foreign research domains could be more enlightening. A deeper examination of the Chinese tradition of thinking would also have been an advantage.

Before ending the dissertation, in retrospect to the whole research, there are some final implications. Although people always stay in paradigms, for this study, after identifying many paradigms, only one paradigm-candidate is recommended: Chinese urbanisation research should be problem-oriented and sufficiently deductive. This actually suggests recovering the originality of human thinking, the paradigm of “no-paradigm”. As Feyerabend advocates in *Against Method* (1988, 9): “theoretical anarchism is more humanitarian and more likely to encourage progress than its law-and-order alternatives.”

But dialectically, it is worth remembering that knowledge development is the accumulation of paradigms. So at the same time, in the field of Chinese urbanisation research we do anticipate new paradigms. Without the accumulation of paradigms, there is no way to progress. That is, newly-acquired valid knowledge should be inherited as paradigms, which therefore work as the basis for further advancement.

Obviously, there is much work to be done in this respect with regards to Chinese urbanisation research. There must have been valid new knowledge achieved in various research projects, which may have challenged the existing paradigms from one or two perspectives. But our investigation of the problematic paradigms seems to show that these achievements have not been well integrated in many studies. There does not seem to be a valid accumulation of appropriate paradigms. A practical reason for this failure could be the failure of literature review in many studies. But the paradigm thesis also implies some more essential reasons for this phenomenon. For example the unconscious working of old paradigms and particularly the inter-support between paradigms reduces the chance for new ideas to be deposited. But a more fundamental reason should be found in the paradigmatic inductive and prescriptive research methodology in Chinese urbanisation research. For despite pure inspiration, deductive speculation is perhaps the unique way of arousing new questions. The aspiration to answer questions must be the main stimulus of surveying literature. And hence, relevant studies will naturally come together and paradigm accumulation becomes a smooth process.

Some may think that the discussions in this study is highly philosophical, and less specifically about “Chinese urbanisation research”. But of course these general arguments are essential to Chinese urbanisation research. Answers go after questions, and the questions of Chinese urbanisation research are in effect very basic. This study is the logical outcome of thinking about the problems in Chinese urbanisation, and then the associated research activity. The beginning of this thinking is that some key issues in Chinese urbanisation are ignored by research. But the research community still lacks active debate. Nevertheless, “a healthy discipline is one which subjects itself to continual, constructive criticism, involving all its adherents in debates about its goals and procedures” (Johnston, 1985: Preface). In this circumstance, the author did not see any reason that the examination of such a phenomenon could be bypassed. As to the final conclusion, it is actually to recover many basic methodological principles of research in Chinese urbanisation research, such as deduction or rationality. This is

not strange either, for what troubles people most seems based around the simplest rationale. In our era where “mature” knowledge seems pervasive, the evidence in the study proves the relevance of recalling the basic rationale of thinking. And, the advance of human intellectuality does not always mean “progress”. It is also producing more implicit and sophisticated falsity. In this aspect, this study plays a role of clarifying some truth-like misunderstandings in existing knowledge rather than creating a new perspective. This research itself is indeed a practice of the rationality which itself concludes, though there must be still errors or insufficiencies. It is the outcome of a continuous deductive exploration.

For the author, examination of a scientific community was not the intention. Rather, he is trying to solve his own confusions, and these confusions are epistemological and related to the phenomenon of collective research behaviour. After this study is finished, the confusions are solved and, relevant appropriate paradigms accumulated, leaving the metaphysical thinking and engagement in more applied research relating to Chinese urbanisation will be the next destination.

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Geography 1998 (4): 27-32. (Translated from Chinese)

Zong, L. (1988) Urban size structure and the strategy for its development in China, *City Planning Review* 1988 (1): 34-38. (Translated from Chinese)

Appendix 1: List of the Two Hundred and Eighteen Sample Papers

This list is translated from Chinese and sorted by the time sequence.

Part 1: Papers from *Chengshi guihua* (City Planning Review)

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2. Planning Panel (1978) Introduction of Wuming City Planning, *City Planning Review* 1978 (7): 14-15.
3. Lin, B. (1979) Methods for city population prediction, *City Planning Review* 1979 (4): 92-95.
4. Wu, Y. (1979) Socialist urbanisation in China, *City Planning Review* 1979 (5): 13-25.
5. Regional Planning Research Panel (1980) Distribution and prospect of urban settlements in middle Liaoning Province, *City Planning Review* 1980 (5): 26-33.
6. Ye, S. (1980) Development of small towns in middle Liaoning Province, *City Planning Review*, 1980 (5): 34-40.
7. *City Planning Review* Correspondent (1980a) Heralding the second spring of city planning in China: National Conference on City Planning being held in Beijing, *City Planning Review* 1980 (6): 3-5.
8. *City Planning Review* Correspondent (1980b) Discussions on city planning: a report of National Conference on City Planning, *City Planning Review* 1980 (6): 6-9.
9. Zheng, Z. (1980) Urban size and distribution planning of Hubei Province, *City Planning Review* 1980 (1): 3-7.
10. Lun, Y. and Deng, W. (1980) Evaluation on city master planning, *City Planning Review* 1980 (2).
11. Zhang, S. (1981) On the planning and construction of large cities, *City Planning Review* 1981 (3): 5-8.
12. Wu, Y. and Xia, Z. (1981) On the healthy development of medium-sized cities, *City Planning Review* 1981 (3): 22-34.
13. Luo, Q. (1981) Features of urban settlements and urbanisation in Anhui Province, *City Planning Review* 1981 (3): 34-38.
14. Wu, T. (1981) Several issues in city planning: a case of Shijiazhuang City, *City Planning Review* 1981 (3): 39-44.
15. Wang, X. (1981) Methods for small town planning, *City Planning Review* 1981 (4): 16-19.
16. Ge, Q. (1981) Several issues in Hangzhou City planning, *City Planning Review* 1981 (4): 31-39.
17. Wu, L. (1982) Making city planning on the basis of local conditions, *City Planning Review* 1982 (1): 1-9.
18. Song, J. T. (1982) Application of Economic Geography in city planning, *City Planning Review* 1982 (1): 24-27.
19. Li, M. (1983) Rightly understanding and implementing the national guideline for urban

- development, *City Planning Review* 1983 (1): 8-14.
20. Cao, H. (1983) Pushing the development of small towns is a strategic issue, *City Planning Review* 1983 (2): 6-8.
 21. Zhou, Y. (1983) Regional differentiation of urbanisation in China, *City Planning Review* 1983 (2): 17-22.
 22. Hu, X. (1983) An analysis on the urbanisation level in China, *City Planning Review* 1983 (2): 23-26.
 23. Li, B. (1983) Discussion on the road for urbanisation in China, *City Planning Review* 1983 (2): 27-28.
 24. Zhang, T. (1983) Dynamics of urbanisation, *City Planning Review* 1983 (5): 59-62.
 25. Zhao, X. (ed.) (1984) Three decades of city planning in China (1949-1982), *City Planning Review* 1984 (1): 42-48.
 26. Cao, H. (1984) Evolution of the national guideline on city planning in China, *City Planning Review* 1984 (5): 12-15.
 27. Qian, X. (1985) A proposal of establishing Urbanology, *City Planning Review* 1985 (4): 26-28.
 28. Zhou, Y. (1986) Alternatives of the conceptualisation and statistical criterion of "urban" and "urban population" in China, *City Planning Review* 1986 (3): 10-15.
 29. Zong, L. (1988) Urban size structure and the strategy for its development in China, *City Planning Review* 1988 (1): 34-38.
 30. Yan, G. (1988) Dynamics of urbanisation in China, *City Planning Review* 1988 (1): 39-41.
 31. Zhou, Y. and Yu, T. (1988) Debate on the national guideline for urban development, *City Planning Review* 1988 (3): 33-36.
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32. Zhao, Y. J. (1990) Strategies and choices: looking back the road of urbanisation in China, *City Planning Review* 1990 (3): 41-45.
 33. Yan, X. (1990) On the anti-urbanisation in Western countries, *City Planning Review* 1990 (3): 46-49.
 34. Meng, X. (1992) Urbanisation and the roads of urbanisation, *City Planning Review* 1992 (3): 9-13.
 35. Fu, Y. (1993) Character of Chinese urbanisation, *City Planning Review* 1993 (4): 54-56.
 36. Yao, S. and Hou, X. (1994) Strategy for urban development in China into next century, *City Planning Review* 1994 (3): 22-24.
 37. Zhang, X. (1995) Calculation and evaluation of the urbanisation level in Wuxi area, *City Planning Review* 1995 (4): 25-26.
 38. Li, B. (1995) A rational scrutiny on city planning in the context of the market-based Socialism economic system, *City Planning Review* 1995 (5): 7-10.
 39. Sit, F. S. and Yang, C. (1995) Urbanisation influenced by foreign investment: a case of Pearl Delta, *City Planning Review* 1995 (5): 21-27.
 40. Ge, B. (1995) Prospect of small towns in economy-advanced area, *City Planning Review* 1995 (6): 28-31.
 41. Zhao, S. (1996) On the progress and prospect of urbanisation in China, *City Planning Review* 1996 (2): 4-5.
 42. Li, B. (1996) Reform of city planning in the circumstance of resources shortage, *City Planning Review* 1996 (2): 6-11.

43. Tao, R. and Shen, W. (1996) On the development of large cities in China, *City Planning Review* 1996 (3): 33-36.
44. Ma, D. and Zheng, X. (1996) Lessons from the planning and construction of experiment small towns, *City Planning Review* 1996 (3): 37-40.
45. Lao, C. (1996) On Hefei city master planning, *City Planning Review* 1996 (3): 44-46.
46. Shi, C. (ed.) (1996) Report on the 96 annual conference of City Planning Academy of China, *City Planning Review* 1996 (4): 4-8.
47. Li, B. and Wang, Z. (1996) On the revision of city master planning, *City Planning Review* 1996 (4): 9-13.
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49. Wu, L. (1996) Towards a future of sustainable development: from “Chongqing Songlinpo” to “Istanbul”, *City Planning Review* 1996 (5): 4-6.
50. Chen, B. (1996) Perspective planning versus master planning, *City Planning Review* 1996 (5): 7-10.
51. Xu, J. (1996) Trend of post-modern city, *City Planning Review* 1996 (5): 10-13.
52. Zhao, M. and Sun, B. (1996) Allocation of town and village enterprises and the development of small towns, *City Planning Review* 1996 (5): 18-21.
53. Wang, Y. (1997) City planning strategy in the take-off stage of urbanisation: a case of middle-western China, *City Planning Review* 1997 (1): 11-13.
54. Xu, J. (1997) On the growth of city population, *City Planning Review* 1997 (1): 17-19.
55. Zhang, W. and Mao, J. (1997) Three questions relevant to the prediction of city population, *City Planning Review* 1997 (1): 20-21.
56. Shen, C. (1997) A method for urbanisation level prediction, *City Planning Review* 1997 (1): 22.
57. Project Panel (1997) Several strategic issues relating to Chinese urban development into next century, *City Planning Review* 1997 (1): 23-25.
58. Wu, L. (1997) HABITAT II and habitat environmental science, *City Planning Review* 1997 (3): 4-9.
59. Shi, Y. and He, S. (1997) A hypothesis of the rural-urban integration, *City Planning Review* 1997 (5): 36-38.
60. Wu, C., Chen, W., Gu, R. and Zhang, L. (1997) Rural-urban duality in China and its integrative development, *City Planning Review* 1997 (5): 38-41.
61. Yang, R. (1997) Several questions on the hypothesis of rural-urban integration, *City Planning Review* 1997 (5): 41-43.
62. Liu, J., Peng, Z. and Xu, Q. (1997) Rural-urban transition and co-operative development in the suburban of Shanghai, *City Planning Review* 1997 (5): 44-46.
63. Ma, W. (1997) Urbanisation and agricultural modernisation: potential crisis and hope for Chinese urbanisation, *City Planning Review* 1997 (6): 26-29.
64. Yao, S., Wu, C., Zhao, H. and Tang, M. (1997) Key issues of Chinese urbanisation, *City Planning Review* 1997 (6): 30-31.
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 68. *City Planning Review* Correspondent (1998b) Reinforcing macro regulation and pushing the healthy and orderly advance of urbanisation: a review of the Forum on Strategy for Urbanisation and Urban Development in China, *City Planning Review* 1998 (2): 54-55.
 69. Yu, Z. (1998) A strategic approach towards urbanisation, *City Planning Review* 1998 (3): 6-7.
 70. Zhou, G. (1998) Urbanisation and sustainable development, *City Planning Review* 1998 (3): 8-9.
 71. Wang, H. Y. (1998) Chinese urbanisation in the context of post-industrialisation, *City Planning Review* 1998 (5): 43-46.
 72. Lu, B. (1998) A rational exploration on the long-term time length for urban system planning of Jilin Province, *City Planning Review* 1998 (5): 58-59.
 73. Hu, X. (1998) Spatial concentration and dispersion in urban aggregation areas along the coast of China, *City Planning Review* 1998 (6): 22-28.
 74. Zhao, Y. J. (1999) Theory and hypothesis: market choke and resources shortage in the process of urbanisation, *City Planning Review* 1999 (12): 13-16.
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 76. Yang, X. (2000) Guideline for urbanisation in Zhejiang Province, *City Planning Review* 2000 (1): 20-22.

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2. Hu, X., Chen, H., Li, W. and Yang, S. (1981) Reinforcing the research on economic zoning and regional planning in China, *Economic Geography* 1981 (1): 13-17.
3. Zeng, H. and Xu, X. (1981) Demographic classification in urban planning, *Economic Geography* 1981 (1): 69-73.
4. Cui, G. (1982) Several questions of regional economic analysis in urban planning, *Economic Geography* 1982 (1): 56-61.
5. Ye, S. (1982) Development of small towns in the middle Liaoning Province, *Economic Geography* 1982 (1): 62-67
6. Survey Panel (1982) A preliminary analysis on the development of small towns in Zhejiang Province, *Economic Geography* 1982 (1): 67-72.
7. Wang, X. (1982) A review of the small town construction, *Economic Geography* 1982 (1): 77-80.
8. Wu, Y. (ed.) (1983) A review of the *Symposium on the Road of Urbanisation in China*, Nanjing, *Economic Geography* 1983 (1): 77-79.
9. Feng, Y. (1983) Is the small town the only choice for Chinese urbanisation? *Economic Geography* 1983 (2): 136-140.
10. Ma, Q. (1983) A preliminary analysis on the character and prospect of Chinese urbanisation, *Economic Geography* 1983 (2): 126-131.
11. Li, X. and Jin, Q. (1983) Regeneration of rural settlements in Jiangsu Province, *Economic*

- Geography* 1983 (2): 132-135.
12. Ji, S. (1984) On the road of rural urbanisation in China, *Economic Geography* 1984 (1): 33-39.
 13. Zhou, Y. (1984) Several questions in Chinese urbanisation, *Economic Geography* 1984 (2): 116-122.
 14. Mai, D. (1984) Prediction of population in a small town, *Economic Geography* 1984 (2): 146-151.
 15. Sun, P. and Ye, S. (1984) Urban system structure and prospect of various sizes of urban settlements in Beijing-Tianjin-Tangshan area, *Economic Geography* 1984 (3): 171-177.
 16. Qi, L. and Sun, J. (1984) A preliminary analysis on the strategy for the development of urban aggregation in middle Liaoning Province, *Economic Geography* 1984 (3): 209-214.
 17. Xu, Z. (1985) Reasonable utilisation of the land resource in Beijing-Tianjin-Tangshan area, *Economic Geography* 1985 (1): 44-49.
 18. Lu, D. (1985) Regional development and spatial structure in Beijing-Tianjin-Tangshan area, *Economic Geography* 1985 (1): 37-43.
 19. Zhao, X. (1985) Nature of Dalian City, *Economic Geography* 1985 (1): 65-69.
 20. Liu, S. (1985) Formation and evolution of the urban geographical character and the prospect of cities in Hubei Province, *Economic Geography* 1985 (2): 139-145.
 21. Ren, Q. (1985) Rural urbanisation and the construction of small towns, *Economic Geography* 1985 (2): 146-150.
 22. Yuan, H. (1985) Migration and environment in Northwest China, *Economic Geography* 1985 (3): 197-201.
 23. Zhu, B. and Wang, G. (1985) Control of urban population and migration from rural area, *Economic Geography* 1985 (3): 202-206.
 24. Wan, L. (1985) Urban development and allocation in Hefei City region, Anhui Province, *Economic Geography* 1985 (4): 253-259.
 25. Wu, Y. (1985) Objective, content and method of city or county regional planning, *Economic Geography* 1985 (4): 260-266.
 26. Zheng, T. and Wang, X. (1985) Economic development and urbanisation in Baoan County, Guangdong Province, *Economic Geography* 1985 (4): 295-299.
 27. Wang, S. and Han, C. (1986) Speed of urbanisation and distribution of city and town population in recent China, *Economic Geography* 1986 (1): 3-9.
 28. Xu, X. and Zhu, J. (1986) The prospect of Urban Geography in China, *Economic Geography* 1986 (1): 10-14.
 29. Chen, Q. (1986) Evolution and distribution of population in Chendu City, *Economic Geography* 1986 (2): 148-153.
 30. Zhang, Y., Li, H., Bai, J., and Wu, H. (1986) Strategy for urban economic development in Heilongjiang Province, *Economic Geography* 1986 (2): 142-147.
 31. Hu, Z. (1987) Characteristics of Wenzhou Model and its geographical backdrop, *Economic Geography* 1987 (1): 19-24.
 32. Zhang, T. (1987) Several issues in master planning in China, *Economic Geography* 1987 (2): 122-126.
 33. Tong, X. and Peng, X. (1987) Method of village and town allocation planning in a county region context, *Economic Geography* 1987 (2): 131-6.
 34. Chen, L. (1987) Continuous development of grain produce in China, *Economic Geography* 1987 (2): 83-87.

35. Fu, W. (1987) Relationship between central city and regional urban system: a case of Yichang, *Economic Geography* 1987 (3): 216-221.
36. Song, L. (1987) Budding of a new rural-urban relation, *Economic Geography* 1987 (4): 258-262.
37. Chen, W. (1987) Several basic questions relevant to urban system planning in China, *Economic Geography* 1987 (4): 263-268.
38. Shou, S. and Chen, L. (1988) Urbanisation in under-developed areas, *Economic Geography* 1988 (1): 20-25.
39. Huang, B. (1988) Economic development and urban distribution in Sizhuan Province, *Economic Geography* 1988 (1): 26-30.
40. Sun, Y. and Lin, Y. (1988) Process and types of rural urbanisation, *Economic Geography* 1988 (1): 31-35.
41. Yuan, H. (1988) Several issues relating to the development of Chaidamu Basin, *Economic Geography* 1988 (2): 121-124.
42. Li, Z. (1988) A review of the National Symposium on Human Geography, *Economic Geography* 1988 (2): 150-151.
43. Yu, S. (1988) Urbanisation and its development in Anhui Province, *Economic Geography* 1988 (3): 199-200.
44. Wu, H. (1988) Dynamic changes of sources contributing to city and town population growth in China, *Economic Geography* 1988 (3): 204-208.
45. Yang, S. (1988) On the development of townships in Hunan Province, *Economic Geography* 1988 (3): 218-220.
46. Xu, X. and Zhang, R. (1988) Geography and the research on development, *Economic Geography* 1988 (4): 241-244.
47. Chen, W. (1988) Problems and solution of urban land use in China, *Economic Geography* 1988 (4): 257-260.
48. Ding, J. and Liu, H. (1988) Evaluation on models of urban hierarchy for Chinese urban system, *Economic Geography* 1988 (4): 253-256.
49. Zheng, H. and Gu, C. (1988) Evolution and character of urban distribution along coast in China, *Economic Geography* 1988 (4): 261-263.
50. Sun, Z. (1989) A new notion of rural-urban integration, *Economic Geography* 1989 (1): 26-29.
51. Pan, G. (1989) A preliminary study on the development and distribution planning of urban system in south-west Shandong Province, *Economic Geography* 1989 (2): 133-140.
52. Gao, X. (1989) The development of Spatial Interactive Model and its application, *Economic Geography* 1989 (4): 251-254.
53. Liang, Z. (1989) Urban system structure in Gansu Province, *Economic Geography* 1989 (4): 279-282.
54. Yu, W. (1989) Application of "aggregation efficiency" in urban and regional development, *Economic Geography* 1989 (4): 255-260.
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57. Li, Y. (1990) Urban development and distribution in Henan Province, *Economic Geography* 1990

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58. Chen, H. and Liu, Z. (1990) Stages of regional urban system development and its application, *Economic Geography* 1990 (1): 66-70.
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60. Gu, C. (1990) A size distribution model of Chinese urban system and its structural prospect, *Economic Geography* 1990 (3): 54-56.
61. Liu, X. (1990) On the improvement of urban system in Yunnan Province, *Economic Geography* 1990 (3): 57-60.
62. Ye, Y. (1990) Several issues of urban development in Nanling mountainous area, Hunan Province, *Economic Geography* 1990 (3): 60-66.
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64. Wu, Q. and Yuan, G. (1990) On the development strategy for Yueyang City, *Economic Geography* 1990 (4): 71-8.
65. Wang, S. (1991) Urbanisation and regional economic development, *Economic Geography* 1991 (1): 45-49.
66. Ma, Q., Chen, T. and Tian, W. (1991) Theory and method of city-designation planning, *Economic Geography* 1991 (2): 1-5.
67. Zhang, Y. (1991) Immigrants and economic development in Gansu and Qin Hai Province, *Economic Geography* 1991 (2): 29-31.
68. Han, G. (1991) Formation and evolution of urban system in Yulin area, Guangxi, *Economic Geography* 1991 (2): 37-41.
69. Gu, S. (1991) Characteristics of Chinese urbanisation and strategy for its development, *Economic Geography* 1991 (3): 22-27.
70. Yang, J. and Jia, X. (1991) Migration and environmental capacity of population, *Economic Geography* 1991 (3): 39-41.
71. Huang, M. (1991) Locality selection of modern enterprises and its spatial implication, *Economic Geography* 1991 (4): 7-11.
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74. Li, R. (1992) On contemporary changes of temporal and spatial distribution of urban population in China, *Economic Geography* 1992 (1): 15-18.
75. Zhang, W. (1992) On urbanisation in Western China, *Economic Geography* 1992 (1): 19-22.
76. Yang, C. (1992) Growth and development strategy of township and village enterprises, *Economic Geography* 1992 (1): 66-70.
77. Hu, Z. (1992) An uneven process towards equilibrium: structural change of economic zones since the adoption of opening policy, *Economic Geography* 1992 (2): 1-3.
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92. Wan, J. (1994) Node-axis layout model of regional development in Guangxi, *Economic Geography* 1994 (1): 34-37.
93. Wang, S. (1994) Influence on China's future urbanisation by urban efficiency difference, *Economic Geography* 1994 (1): 46-52.
94. Dai, H. (1994) On urban system structures of Shandong Province, *Economic Geography* 1994 (2): 27-31.
95. Jiao, H. (1994) On the problems of rural surplus labour in Anhui Province, *Economic Geography* 1994 (2): 66-70.
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Appendix 2: An Example of Coding Sheet

Titles	Attitudes towards the accelerating urbanisation approach			Research topics						
	Sup't or accept	Rej't or sus't	Irr't	Monitoring and prediction of urbanisation level growth	Optimal urban sizes and urban hierarchy	Urban system	synthesising discussion on Chinese urbanisation or review article	A different topic but relevant to Chinese urbanisation	
.....											
Zhao, S. (1996) On the progress and prospect of urbanisation in China, <i>City Planning Review</i> 1996 (2): 4-5.		✓						✓			
Li, B. (1996) Reform of city planning in the circumstance of resources shortage, <i>City Planning Review</i> 1996 (2): 6-11.	✓								✓		

Continued

<p>Tao, R. and Shen, W. (1996) On the development of large cities in China, <i>City Planning Review</i> 1996 (3): 33-36.</p>	✓				✓						
<p>Xu, J. (1997) On the growth of city population, <i>City Planning Review</i> 1997 (1): 17-19.</p>	✓			✓							
<p>Yu, Y. (2000) Optimal sizes and their efficiency of China's cities and towns, <i>Economic Geography</i> 2000 (2): 84-89.</p>			✓		✓						
<p>Zhong, X. (2000) Scrutiny on the road and strategy for Chinese urbanisation in the turn of a new century, <i>Economic Geography</i> 2000 (3): 54-7.</p>	✓							✓			
<p>.....</p>											