# TOURISM PROBLEMOLOGY:

## Reflexivity of Knowledge Making

**Abstract.** Although problems are a fundamental dynamics of tourism knowledge production, a systematic, exclusive, and in-depth study of tourism problems or tourism problemology has been overlooked. This study, which represents the first time to examine the nature of tourism problemology, aims to fill this gap. A theoretical model is developed and partially tested through a survey of 212 Chinese tourism researchers. Results show that researchers generally consider problems as difficulties or contradictions that require resolution. Moreover, personal/environmental factors influence the researchers' understanding of problems, and such understanding further affects their evaluation and selection of problems at the early stage of research. The study highlights the significance of problems as an important, yet overlooked reflexivity of tourism knowledge production.

**Key Words:** problemology; knowledge production; reflexivity; research community; theorizing

## INTRODUCTION

The rapid growth of tourism knowledge in recent decades has brought with it a growing reflexivity concerning such knowledge. A critical form of this reflexivity is expressed in the comment that ‘‘for all the evident expansion of journals, books and conferences specifically devoted to tourism, at a general analytical level it remains under-theorized, eclectic and disparate’’ (Meethan, 2001, p. 2) or “such expansion…resulted in simply a greater volume of research which is mainly confirmatory and reproductive” (Ateljevic, Pritchard, & Morgan, 2007, p. 12). The more common and organized manifestation, however, is reflected by researchers’ increasing interest in rethinking tourism knowledge itself (e.g., Xiao, Jafari, Cloke, & Tribe, 2013; Xiao & Smith, 2006), its consumption (e.g., Cooper, 2006; Xiao & Smith, 2007), and its production (e.g., Franklin & Crang, 2001; Hall, 2004; Platenkamp & Botterill, 2013). Such interest echoes a sociological approach to knowledge.

Reflections upon the production of tourism knowledge are particularly significant because knowledge production logically predates the knowledge itself and its subsequent consumption. Many factors have been found to influence the knowledge production process, including, but not limited to, paradigm commitment (e.g., Ateljevic, et al., 2007; Hall, 2004; Phillimore & Goodson, 2004; Platenkamp & Botterill, 2013), research methods (e.g., Ritchie, Burns, & Palmer, 2005), disciplinary background (e.g., Tribe, 2004), scholar networking (e.g., Benckendorff & Zehrer, 2013), and new technology (e.g., Liburd, 2012). The present study continues the pursuit of this particular interest by examining the role of *research problems*—an important yet less examined factor—in tourism knowledge production. Problems have been widely acknowledged as central to research activities. Renowned philosophers of science, such as Karl Popper, Thomas Kuhn, and Larry Laudan have collectively placed considerable emphasis on problems.

The vital role of problems in research has led to the advent of ‘problemology’, an emerging sub-branch in the philosophy of science (Lin, 1990, 1991, 2005). This term was first noted at the 8$^{th}$ International Congress of Logic, Methodology and Philosophy of Science in 1987 (Lin, 2005). Literally meaning study of problems, problemology can be deemed as a philosophical investigation of problems as a whole. Although first discussed by philosophers, researchers from physics (e.g., Einstein & Infeld, 1961), mathematics (e.g., Hilbert, 2009), artificial intelligence (e.g., Luger, 2009), and psychology (e.g., Davidson & Sternberg, 2003) have shown enthusiasm for this topic. Thus, the connotation of problemology has expanded since the 1990s, and at present, problemology refers to any focused study of problems in general terms (Zhang, 2005).

Despite the momentum that problemology has gained since the 1980s, the tourism research community has been reticent toward it. Tourism researchers seem to be more interested in solving *specific* problems than in knowing the *general* nature of problems. A significant body of tourism literature has documented numerous specific problems, such as host-guest conflicts, gender inequality, second homes, tourism related crimes, and the ambiguity of tourism as a concept, as well as disciplinary debates on tourism. However, no extant work directly questions the nature of these problems and their roles in the tourism

knowledge production process. The preference not to focus on the nature of problems is not wrong; solving specific problems is indispensable to the creation of concrete tourism knowledge. However, problems are fundamental to tourism research (as to any other scientific research); thus, knowing more about problems is important. Self-awareness of what needs to be solved can contribute to better solutions.

Thus, this study aims to fill this gap through a systematic, exclusive, and in-depth study of tourism research problems as a whole. In other words, this study attempts to build, for the first time, a tourism problemology (TP) or the application of problemology to tourism through two phases of exploration: model construction based on the problemology literature, and model specification and testing in an empirical context. In particular, three interrelated questions are addressed: (a) What is the nature of tourism problems? (b) What affects tourism problems? and (c) What are the implications of tourism problems? This study may increase current understanding of tourism problems and the dimensions of reflexivity of tourism knowledge production.

## THEORIZING TOURISM PROBLEMS

Building the TP may either be *inductive* or *deductive*. The former entails summarizing how specific tourism problems have been dealt with toward understanding TP. The latter involves inferring TP from the existing literature on problemology. The deductive approach was chosen for this study because it is logically workable and practically necessary. TP pertains to the reification of problemology in the field of tourism; the basic tenets of problemology, therefore, can be logically applied to TP. Although problemology is an emerging field (Lin, 2005; Zhang, 2005), a concrete body of literature has been created, which can serve as the theoretical basis for TP. A deductive approach is also practical because it begins with something (i.e., problemology literature) that already exists and entails initiating a constructive dialogue between philosophy and tourism.

After the selection of a deductive approach, problemology, the theoretical basis for TP, was introduced. Problemology, as aforesaid, originally refers to a philosophical investigation of problems, but its connotation has been extended in its later development (Lin, 2005; Zhang, 2005). Problemology may be seen as comprising three hierarchical levels: (a) the core consisting of classic problem discourses by influential philosophers, (b) the intermediary level composed of problem studies that overtly employ the terminology of problemology, and (c) the periphery, which include discussions of problems by working scientists within their own disciplines and fields. How these different levels of problemology interact and form a united system is an important question in itself. However, these concerns are beyond the scope of this study. All levels inform the construction of TP, but in the present study, the core level was given more weight.

Critical review of literature revealed that problemology has complex content and structure as well as three basic components: the nature of problems, the antecedents of problems, and the consequences of problems. The first component is concerned with what problems are. Problems have multiple meanings and as such, these evade precise definitions (Lin, 2005; Zhang, 2005). The problemology literature, examined against the definition theory

in logic (Copi & Cohen, 2005; Hurley, 2008), has provided both the connotation and the denotation of problems. Among the various definitions in literature, six are noteworthy. Problems have been defined as: (a) difficulties for researchers to overcome (Collingwood, 1948; Dewey, 1910; Popper, 1972), (b) barriers between given conditions and desirable goals (Sternberg & Spear-Swerling, 1996), (c) gaps between explanation ideals and current capabilities (Toulmin, 1972) or between current and ideal situations (He, 1983; Lin, 2005; Simon, 1981), (d) contradictions in any theoretical system (Laudan, 1977; Liu, 1987), (e) labyrinths for people to pass through (Zhang, 2005), and (f) puzzles people derive from an observation or a given situation (Laudan, 1977; Lin, 2005).

A variety of classifications have been recommended as regards the denotation of problems. These classifications are genuine and pseudo, actual and potential, controllable and uncontrollable, normal and abnormal, conceptual and empirical, solved and unsolved, practical and theoretical, open and closed, and philosophical and scientific, among others. Among these, the conceptual and empirical category of Laudan (1977) appears useful. An empirical problem is "anything about the natural world which strikes us as odd, or otherwise in need of explanation" (p. 15), whereas a conceptual problem arises from a theory when it "exhibits certain internal inconsistencies…[or] is in conflict with another theory" (p. 49). To date, a universal agreement on the meaning and classification of problems is yet to be reached.

The second component of problemology involves the numerous factors that influence problems. These factors can be divided into two groups: personal and environmental (Zhang, 2005, pp. 293-296). Personal factors include research experience (Popper, 2001), paradigm commitment (Kuhn, 1962), world view (Patterson & Williams, 1998), interest in knowledge (Habermas, 1978), researchers' background knowledge (Laudan, 1977; Popper, 1959), researchers' subjective state (e.g., assumption, suspicion, imagination) (Einstein & Infeld, 1961), and philosophical stance (Rosenberg, 2008), whereas environmental factors include research community (Kuhn, 1962), research tradition (Laudan, 1977), historical context (Collingwood, 1948), cultural context (Lyotard, 1984), problem situation (Sternberg & Spear-Swerling, 1996), and public expectation for scientific knowledge and change of knowledge production mode (Gibbons, 1994; Nowotny, Scott, & Gibbons, 2001). These factors can affect the defining, proposing, evaluating, selecting, and solving of problems. Although the lists are not exhaustive, this personal-environmental model is useful in understanding these factors and their complex relationships.

The third component of problemology focuses on the value of problems. The general implications of problems are discussed in different contexts. The anecdotal story of Zhang (2005, p. 1) is a case in point. Philosopher George Moore of Cambridge University was once asked by Bertrand Russell who his best student was, and replied, Ludwig Wittgenstein, who always asked a considerable number of questions (as expression of problems) about his lectures. Many years later, Wittgenstein indeed became more famous than Russell and, when asked why, answered that Russell had no more problems to solve in his later career. From this example, problems are clearly necessary to motivate philosophers to think and work. In fact, philosophers emphasize this general significance of problems in their books, such as *The*

*Problem of China* (Russell, 1922), *Problems of Men* (Dewey, 1965), and *All Life is Problem Solving* (Popper, 1999).

Apart from their general significance, problems have more specific and direct impacts on research. Problems are fundamental in initiating, guiding, and evaluating research activities. This idea, or certain parts of it, can be found in the well-known five-step research methodology of Dewey (1910), logic of scientific discovery of Popper (1959), model of scientific progress of Laudan (1977), and notion of research program of Lakatos (1978). A good explication for this idea is the famous research model, $P_1$—TT—EE—$P_2$ of Popper (1972, p. 164).

> *$P_1$* is the *problem* from which we start, *TT* (the "tentative theory") is the imaginative conjectural solution which we first reach, for example our first *tentative interpretation*. *EE* ("*error elimination*") consists of a severe critical examination of our conjecture, our tentative interpretation…*$P_2$* is the problem situation as it emerges from our first critical attempt to solve our problems. It leads up to our second attempt (*and so on*). A satisfactory understanding will be reached if the interpretation, the conjectural theory…can throw new light on new problems…or if…it explains many sub-problems, some of which were not seen to start with. Thus we may say that we can gauge the progress we have made by comparing *$P_1$* with some of our later problems (*$P_n$*, say).

Underlying this citation is the idea that any scientific research is motivated by, guided toward, and evaluated against problem-solving activities. The general and specific implications of problems for science make problems an important research subject in their own right (Lin, 2005; Zhang, 2005).

After presenting the major contents (i.e., problem nature, problem antecedent, and problem consequence) of problemology, the TP was built. Based on deductive logic, this study defines TP as *a systematic, exclusive, and in-depth study of the nature, antecedent, and consequence of tourism research problems as a whole*. Similar to problemology, TP consists of three parts: tourism problem nature (TPN), tourism problem antecedents (TPA), and tourism problem consequences (TPC). These parts are embedded within an interconnected structure, where two types of effects coexist: TPA→TPN→TPC as the main effect, and TPN→TPA, TPC→TPN/TPA, and TPA→TPC as the minor effects (Figure 1). These constructs and their relationships are jointly determined by the problemology literature and the examination of model theories (Giere, 2004; Hodges, 1993). The model contains constructs at three levels: (a) TPN, TPA, and TPC at the first level; (b) personal and environmental TPAs, primary and secondary TPNs, and specific and general TPCs at the second level; and (c) those constructs belonging to (b) at the third level.

[Figure 1 is about here]

Constructs in (a) and (b) were directly derived from the problemology literature, whereas those in (c) stemmed from a synthesis of the problemology literature and the researchers' experiences. Specifically, personal TPA was categorized into four sub-dimensions: research interest, paradigm commitment, research experience, and researcher demographics.

Environmental TPA was divided into objective condition and subjective perception. Specific TPC was reorganized into three sub-dimensions to represent the influence of problems on the early, middle, and final stages of doing research. These respective dimensions are problem as research initiator, problem as research guide, and problem as research evaluator. The main relationship among the constructs was based on the inherent logic among TPA, TPN, and TPC as implied by the problemology literature. Minor effects were included because the relationships among entities in the social sciences tend to be bilateral and dynamic (Neuman, 2006). These effects were added to the model to make it realistic.

**Study Methods**

*Critical specifications.* After the theoretical model was constructed, the next step involved testing it empirically. The TP model was tested using data collected from a questionnaire-based survey of tourism researchers from China. The empirical testing contained three critical specifications. First, the model was tested and specified simultaneously. Traditionally, testing a model, assumed to be completely specified, means gauging the extent to which it resembles the reality it is supposed to represent (Giere, 2004; Hodges, 1993). The TP model, however, has not undergone complete specification: the third-level multi-faceted constructs (with their own sub-dimensions) need to be specified and this cannot be achieved until they are actually measured.

Second, the test was conducted on third-level constructs to reflect the specific relationship between constructs. The relationship at the first and second levels was inferred based on the relationship actually tested. Four third-level constructs (i.e., secondary TPN, general TPC, problem as research guide, and problem as research evaluator) were excluded from the test owing to the complexity of other third-level constructs in the model and the feasibility of data collection. Incorporating all constructs will lengthen the survey instrument (questionnaire) unnecessarily. Considering these constraints, the test covered only the main effects of the key constructs in the model.

Third, the complex nature of the model and the nonlinear and uncertain relationship among the variables prevented the use of traditional model testing (i.e., testing models by converting them into specific hypotheses). Alternatively, open questions were proposed to replace hypotheses in the test (for more discussions, see Cooley & Lewkowicz, 2003): (a) What is the connotation of a problem? (b) How do personal TPAs (i.e., research interest, paradigm commitment, research experience, and researcher demographics) and environmental TPAs (i.e., objective condition and subjective perception) influence the problem connotation? and (c) What is the influence of problem connotation on the problem as research initiator?

*Survey instrument.* A semi-structured questionnaire was designed to collect the data. The questionnaire measured eight groups of constructs at the third level. The finalized questionnaire, which incorporated the suggestions of the authors' colleagues who checked the quality of the original instrument, has four parts (Table 1). Part I measured the connotation of a problem, as the most direct indicator of TPN. Two items were used to measure this construct: (a) a single-choice question with seven options comprising six problem definitions (1=*contradictions in tourism*, 2=*puzzles of tourism phenomena*, 3=*gaps between the*

*ideal/normal and present/abnormal tourism conditions*, 4=*labyrinth of tourism phenomena*, 5=*barriers that prevent tourism development*, and 6=*difficulties that should be coped with by tourism researchers*) derived from the problemology literature and an alternative option (7=*else*), and (b) an open question (What then is your definition of tourism problems?), which was asked if the alternative option was chosen.

Part II measured the four sub-dimensions of personal TPA. Research interest was measured by one question based on the Habermas (1978) classification of human interest or axiological belief in knowledge into technical, practical, and emancipatory categories. The question was a single-choice question with five options: 1=[tourism research aims] *to find tourism regularities so as to control and predict tourism phenomena (strong technical interest)*, 2=*to explain tourism phenomena so as to control and predict them to some extent (weak technical interest)*, 3=*to criticize tourism realities so as to make positive changes (emancipatory interest)*, 4=*to understand tourism phenomena so as to influence them (practical interest)*, and 5=*all of them are possible (mixed interests)*. Options 2 and 5 were added to reflect the intricacy of research interests.

Paradigm commitment was measured by three items: (a) ontological belief (single choice among: 1=*tourism phenomena are external to us and can be completely known by us [naive realism]*; 2=*tourism phenomena are external to us but can only be partially known by us [realism]*; 3=*tourism phenomena are real and their reality is jointly determined by history, economics, ethics, and gender, among others [historical realism]*; 4=*real tourism phenomena are nonexistent, for they are all subjectively constructed [subjectivism]*; and 5=*all of them are possible [relativism])*; (b) epistemological belief (single choice among: 1=*the researcher and the subject must be separated [neutralism]*; 2=*the researcher and the subject should be separated [revised neutralism]*; 3=*the researcher and the subject should interact [interactionism]*; 4= *the researcher and the subject must be merged with each other [inter-subjectivity]*; and 5= *all of them are possible [relativism])*; and (c) methodological belief (single choice among 1=[tourism research should be] *absolutely quantitative*, 2=*primarily quantitative*, 3=*primarily qualitative*, 4=*absolutely qualitative*, and 5=*all of them are possible*). The specific item values were derived from the paradigm literature (Guba, 1990; Guba & Lincoln, 2005; Patterson & Williams, 2005).

Research experience was measured by five items: number of years engaged with tourism research (fill in the blank), quality of publication (multiple choice: 1=*internationally important*, 2=*international*, 3=*domestically important*, 4=*domestic*, and 5=*others or no publication*), literature familiarity (5-point Likert scale where 1=*very low* and 5=*very high*), number of conferences attended (fill in the blank), and number of research projects undertaken (fill in the blank). The measure of researcher demographics included age (fill in the blank), gender (single choice between 1=*male* and 2=*female*), education (single choice among: 1=*doctor's degree*, 2=*master's degree*, 3=*bachelor's degree*, and 4=*others*), academic status (single choice between 1=*tourism professional* and 2=*tourism graduate*), and academic major (fill in the blank).

Part III measured two sub-dimensions of environmental TPA. The objective condition (of

research environment) was measured by two items: provincial location of the institution (single choice among the 33 provinces/municipalities in China) and the type of institution (single choice among: 1=*internationally known Chinese universities [also called "985" universities]*, 2=*domestically known Chinese universities [also called "211" universities, with the 985 universities being excluded]*, 3=*ordinary universities*, 4=*colleges*, and 5=*others*). Note that, both the 985 and 211 universities resulted from the policies of Chinese government that attempted to build, via intensive government investments, a number of world-famous research-oriented universities in this country. The government designated 112 universities as the 211 universities in 1995 and from the list further selected the best 39 as the 985 universities in 1998.

Subjective perception of research environment was measured at the micro, meso, and macro levels. The micro environment perception measured respondents' evaluation of five dimensions of departments/schools where they work: overall research atmosphere, toughness of the demand for research output, research competitiveness among peers, completeness of research conditions, and attainability of research resources (5-point Likert scale where 1=*very low* and 5=*very high*). The meso environment perception measured respondents' evaluation of five aspects of the institution they work for: *loose—strict, chaotic—organized, utilitarian—anti-utilitarian, uncooperative—cooperative, research prohibitive—research promotive* (7-point semantic differential scale). The macro environment perception measured respondents' evaluation of China's academic milieu, using the same five items utilized in the meso level.

Part IV measured problem as research initiator as the focus of specific TPC and operationalized as consisting of problem proposal, evaluation, and selection. Problem proposal was measured by one item: Please propose three tourism problems you think are important to solve. Problem evaluation was measured by 20 items (5-point Likert scale where 1=*very unimportant* and 5=*very important*) representing 20 problems related to the tourism research projects proposed by the China National Tourism Administration (2007-2011) and the authors' awareness of the general tourism literature. Based on Tribe's (2009) classification of tourism questions into truth-, virtue-, and beauty-orientation, these problems were divided into three broad groups: truth, virtue, and beauty. Problem selection was measured by one item: Among the 20 tourism problems, which three items would you want to select as your research topics?

[Table 1 is about here]

*Data collection and researcher demographics.* The questionnaire was distributed to tourism researchers in Mainland China. Chinese researchers belong to the international tourism community and although the researchers are not representative, they are a valid sample. The respondents belong to two major groups: tourism professionals and tourism postgraduates. The former includes 396 professional researchers from 40 randomly selected tertiary tourism education institutions and 34 leading Chinese tourism experts who participated in the 2010 Tourism Summit on Postgraduate Education. The latter group is made up of 31 MPhil candidates from a leading tourism school in China and 25 PhD candidates

who attended the 2011 Postgraduate Tourism Research Forum in the country. The respondents are a convenient sample of Chinese postgraduates because they come from different parts of China. The email addresses of the respondents were collected from the institution homepages, the summit list, and the forum list.

The postgraduate and expert respondents were purposively selected using mix of quota and stratified random sampling methods. According to China Education Online, as of 2012, 436 tourism institutions in China are officially offering a bachelor's degree in Tourism Management: "985" universities (n=20), "211" universities (n=41), ordinary universities (n=123), and public/private colleges (n=252). For each of the four categories, 10 universities were randomly selected; the first two categories were prioritized owing to their research orientation. The email addresses of the selected researchers were sought from their respective institution homepages. An institution without homepage or list of staff email addresses is replaced by an institution with similar rank and location, whereas an individual affiliated with a selected institution whose email address was unavailable, was disregarded.

The targeted researchers were contacted for the three-phase survey using a commercial online survey provider. In the first phase (December 2011), the survey invitation emails were sent to the 486 researchers; 92 valid questionnaires were received. The second phase (January 2012) involved emailing the unresponsive researchers. As a result, 84 new responses were obtained. In the third round (May 2012), 36 additional completed questionnaires were returned. A total of 212 samples (response rate of 43.62%) were collected. Among the respondents, tourism professionals accounted for 73.68%, whereas tourism graduates accounted for 26.32%. Gender proportions were similar: 51.2% were males and 48.8% were females. In terms of age, the respondents were categorized into five groups: 21–25 (14.6%), 26–30 (10.4%), 31–40 (44.8%), 41–50 (24.5%), and 51–60 (5.7%). As regards educational attainment, 57.4% attained doctor's degrees, 37.3% obtained master's degrees, and 5.3 % graduated with bachelor's degrees. The majors comprised 17 academic disciplines, the top three being management (54.25%), geography (23.58%), and economics (5.66%). Respondents who graduated from "985" universities accounted for 40.1%, whereas those who graduated from "211" universities, ordinary universities, colleges, and other types accounted for 9.9%, 44.3%, 2.4%, and 3.3%, respectively.

*Data analysis*. Data were examined primarily through multivariate analysis and qualitative content analysis. Categorical regression modeling was used to detect statistically significant relationships. Most of the variables are discontinuous, as shown in Table 1. The regression modeling statistics (i.e., $\beta$, $\rho$, and $R^2$) captured the statistical levels and intensities of relationships. Correspondence analysis was adopted to examine co-variance. This method displays two or more variables in a two dimensional space, which allows visual detection of the association between the values of the variables. Generally, when the values of two variables have similar bearing and fall into the same space, these are associated with each other, or co-varying (Hair, Black, Babin, Anderson, & Tatham, 2010). In addition, the difference concerning the evaluation of the 20 testing problems' significance among different problem definition groups was examined by one-way ANOVA to detect the effect of problem connotation on problem evaluation.

## Research Findings

*Nature of tourism problems.* The responses of the respondents regarding the definition of tourism problems varied widely. Of the seven choices, the majority (39.7 %) chose "difficulties that should be coped with by tourism research," followed by "contradictions in tourism" (21.1 %), "puzzles of tourism phenomena" (13.4 %), "barriers that prevent tourism development" (9.1 %), "gaps between the ideal/normal and present/abnormal tourism conditions" (6.7 %), "labyrinths of tourism phenomena" (6.7 %), and "else" (3.4%). These results show that most of the respondents have deemed tourism problems as difficult to deal with and contradictory.

Open-ended responses for a definition of tourism problems revealed three groups. The first group provided clear definitions of tourism problems including: "a problem that comes from reality and has theoretical significance" (Respondent #81, associate professor, female, 37), "scientific problems that are general in the tourism development process and fundamental problems in developing indigenous tourism theories" (Respondent #114, associate professor, male, 38), and "elaboration, argumentation and application of tourism conceptual systems and general regularities" (Respondent #199, postgraduate, male, 35). The second group emphasized the challenge in defining tourism problems, by claiming that "[to define tourism problems is] such a big project and [tourism problems] cannot be easily clarified" (Respondent #129, professor, male, 58) and that "[to define tourism problems] is challenging and [tourism] can only be known [in one's] heart" (Respondent #172 associate professor, male, 37).

The third group consisted of two respondents who were confused by the question. One respondent reported, "[I] have not thought it thoroughly. I can only say the above definitions are very unprofessional. What is an academic tourism problem? Whether tourism research problems differ from the problems of tourism research? Very confused with your question" (Respondent #164, professor, male, 52). Admittedly, the second and third groups casted doubts on the validity of the survey instrument. However, owing to the small number of the respondents, the survey proved to be workable.

*Antecedents to tourism problems.* Data analysis indicates that a problem's connotation is affected by both personal and environmental TPAs (Table 2). The examination of personal TPA show that problem connotation varied according to axiological belief. Figure 2a presents the three relationships derived from correspondence analysis. These are practical interest with difficulties/gaps, technical (strong)/technical (weak) with contradictions/puzzles/labyrinth, and mixed with barriers/else. In addition, the relationship between two paradigm commitment variables (i.e., ontological belief and epistemological belief) and problem connotation is shown. Figure 2b presents the relationships between ontological belief and problem connotation, namely, historical materialism with difficulties, subjectivism with gaps, naïve realism with contradictions/puzzles/labyrinth, and relativism with barriers/else. Epistemological belief is associated with problem connotation, intersubjectivity/revised neutralism with difficulties, revised neutralism with gaps, neutralism/interactionism with contradictions/puzzles/labyrinth, and relativism with barriers. These associations suggest that

researchers with different research purposes and paradigm commitments perceive tourism problems differently. No relationship between the other two personal TPA factors, namely, research experience and researcher demographics, and problem connotation can be determined.

[Table 2 is about here]

[Figure 2 is about here]

Environmental TPA was found to have an influence on problem connotation. Figure 3a shows four types of institution variables associated with problem connotation variables: ordinary university/"211" universities with difficulties, "211" universities with gaps, "985" universities with contradictions/puzzles/labyrinth, and others with barriers/else. The respondents' perception of the micro research environment (department/school) is not associated with problem connotation. By contrast, the perception of the meso (university) and macro (country) research environments is related to problem connotation.

At the meso level, one of the five variables (i.e., organization) is associated with problem connotation. Figure 3b presents the identified associations: those with neutral to negative perception of organization of the universities they work for defined tourism problems as difficulties, whereas those with positive perception of such defined it as contradictions/puzzles/labyrinth. Order (university), utilitarianism (university), cooperation (university), and research promotion (university) have no effects on problem connotation.

At the macro level, two of the five variables are associated with problem connotation, namely, rigidity (China) and organization (China). Specifically, those who perceive China's research environment to be very loose, somewhat loose, or neutral in terms of rigidity have deemed tourism problems differently from the six definitions provided, difficulties, and contradictions/puzzles/labyrinth (Figure 3c). A similar pattern is evident in the association between organization (China) and problem connotation (Figure 3d). Note that utilitarianism (China), cooperation (China), and research promotion (China) did not affect problem connotation.

[Figure 3 is about here]

*Consequences of tourism problems.* Analysis results show that problem connotation is associated with problem as research initiator. Although problem proposal is not affected, problem evaluation and problem selection are both influenced. Table 3 shows the ANOVA results, which reveals that respondents evaluated the importance of seven out of 20 problems differently because of the differences in understanding of the nature of tourism problems. Based on the taxonomy of tourism inquiries of Tribe (2009), the seven problems can be recoded into three groups, namely, beauty-related (Problem #8), truth-related (Problems #15, #16), and virtue-related (Problems #4, #5, #7, and #13) (Table 3). Correspondence analyses indicate the existence of relationships between problem connotation and the evaluation of the seven testing problems (Figures 4a, 4b, and 4c). Respondents who defined tourism problems as labyrinth/else, difficulties/puzzles, and barriers/gaps/contradictions evaluated the testing

problems' importance for research as negative, neutral and positive, respectively. Problem connotation is associated with problem selection (β=.298, F=30.884, p<.001; adjusted $R^2$=.061, F=3.247, p<.01). Figure 4d shows the following associations: gaps/puzzles and truth-beauty/truth-virtue, else and virtue, difficulties/labyrinth and truth-virtue-beauty/truth, barriers/contradictions and virtue-beauty, and barriers and beauty. However, a different problem connotation did not affect the selection of problems.

[Table 3 is about here]

[Figure 4 is about here]

## Discussion

*Interpreting/explaining the key results.* The empirical study finds that: (a) most of the respondents have deemed tourism problems as difficulties and contradictions, (b) problem connotation is affected by both personal and environmental TPAs, and (c) problem connotation affects problem evaluation and problem selection. Collectively, these findings support the postulated relationship among TPA, TPN, and TPC in the theoretical model. Note that the essence of the relationship identified in this study should be interpreted as a *systematic association* of the values of the dependent and independent variables in the model. In total, there are seven groups of association (Table 4). According to the similarities of these groups and the underlying axiological and paradigmatic stances (Guba, 1990; Guba & Lincoln, 2005; Habermas, 1978), three larger groups of association are identified, namely, constructivism (groups 1 and 2), post-positivism (groups 3 to 5), and pragmatism (groups 6 and 7) (Table 4).

First, the constructivism group represents researchers who believe that tourism research should be dedicated to understanding tourism phenomena so as to influence the phenomena under investigation. These researchers believe that tourism phenomena are either determined by factors such as history, economics, ethics, and gender or are purely constructed by humans, and that researchers and subjects should not be separated. These researchers work in domestically known or ordinary Chinese universities. Moreover, these researchers demonstrate slightly negative perceptions of the research environment at the institution/country level and tend to define tourism problem as difficulties that should be dealt with by tourism research. Second, the constructivism group represents those who evaluate the truth/virtue/beauty problems as neutral to positive, and tend to give weight to truth-related tourism problems at the early stage of research. The post-positivism and pragmatism groups can be interpreted in similar ways.

[Table 4 is about here]

How, then, do we explain the systematic association among TPA, TPN and TPC? Overall, the result can be seen as the embodiment of the antecedent-nature-consequence logic of problemology in a given research context that has been captured by a set of research procedures. Although it is less fruitful to discuss how each separately accounts for the result, providing examples is helpful. The match between the ontological and epistemological beliefs

should reflect the tendency among paradigm components toward self-organization. According to Guba (1990; 2005), naïve realism tends to match neutralism, whereas subjectivism tends to relate to intersubjectivity. Such tendency can explain why similar patterns were determined in the present study.

Characteristics of the research context can demystify the bond between type of institution and order (university)/rigidity (China)/order (China), and the bond between type of institution and axiological/ontological/epistemological belief. In China, "985" universities—as compared with their 211/ordinary counterparts—are subject to stricter research management, have more research resources, and enjoy higher academic reputation. This situation may help us understand why tourism researchers from "985" universities believe that the research environment in their institutes is more organized, and that the research environment in China is more rigid and in better order (the first bond). The other bond can be explained by three compound factors: (a) "985" universities undertake most tourism research, particularly theoretical studies because these are more research oriented; (b) tourism research has been dominated by positivism and post-positivism (e.g., Ateljevic, et al., 2007; Phillimore & Goodson, 2004; Platenkamp & Botterill, 2013); and (c) researchers from "985" universities need to follow the rules and participate in international tourism knowledge production in order to survive, and they have a stronger urge to do so compared with those working in other types of institutions in the country.

In addition, the choice of research procedures (i.e., modeling, measurement, sampling, and analytical tools) also contributes to the understanding of the association among the identified TPA, TPN, and TPC. Most likely, the statistics would vary owing to the different procedures adopted. For example, beta coefficients in Table 2 would be slightly different when derived through different processes of the categorical regression analyses because this method is not as robust as linear regression. Admittedly, factors not considered in this study or even coincidence may, to some degree, account for the systematic association. These may rationalize aspects of the less straight match between problem connotation and problem evaluation/selection.

*Implication for TP.* The primary goal of this study is to build TP. The above results have three implications for this goal. First, building TP is feasible. As perhaps the first attempt to theorize tourism problems, this study assumed such possibility. Nevertheless, this assumption has left an important question unanswered: is it possible to build TP despite the realization that problemology has remained at the emerging stage (Lin, 1990, 1991, 2005)? Fortunately, this assumption has been confirmed. Philosophical insights and empirical validation have resulted in a conceptual model of TP with adequate empirical support. This model offers a post hoc justification for this study. Second, it must be pointed out that the building of TP as a project has not been fully completed. Regardless of the achievements, this study has failed to completely specify the model (at the third/fourth conceptual level) and at best, has only tested the major relationship among TPA, TPN, and TPC. Finally, for those interested in TP, a pluralistic attitude is recommended. As previously mentioned, the results of this study can be explained by various factors (i.e., logic of problemology, research contexts, research procedures, and hidden and coincidental forces). The changeability of these factors indicates

that in itself, TP can hardly be singular.

*Implication for problemology.* This study has derived implications for its theoretical basis, that is, problemology. Although the term problemology was first mentioned in the 1980s, it has not been formally established (Lin, 2005). Fragmented studies and lack of consensus on the nature of problems are two major stumbling blocks. To deal with the former, organizing the scattered problem studies by using the antecedent-nature-consequence framework is suggested. This framework is implied by the literature on problemology. Although it has never been recognized by problemologists, it has been proven useful by this study, particularly in structuring the fragmented problem studies into meaningful knowledge blocks.

For the second barrier, a dialogue between philosophy and science is recommended. Thus far, philosophers of science are the major contributors to problemology (Lin, 2005; Zhang, 2005). However, it is generally known that in philosophy, there are more problems proposed than solved (Rosenberg, 2005). To justify claims, philosophers usually rely on argumentation, which tends to encourage rather than discourage divergent views. A scientific approach is helpful in avoiding this situation because unlike philosophers, scientists collect empirical data to test any theoretical claim before accepting it. Hence, debates on the nature of problems may be reduced if these can be tested empirically. Indeed, this reduction has been observed in the present study. Among the six definitions derived from the literature on problemology, difficulties and contradictions were preferred by the tourism researchers. Such preference can hardly be reached through philosophical arguments only. Thus, for problemology to grow, it must embrace contributions from both philosophers and scientists.

*Implication for rethinking tourism knowledge production.* Previous studies have mentioned that tourism knowledge production can be affected by such factors as paradigm commitment, research methods, disciplinary background, scholar networking, and new technology. By focusing on research problems, this study finds that both personal and environmental TPAs affect TPN/TPC, but the latter has stronger influence (Tables 2 and 3). Research problems are part of the process of tourism knowledge production and TPAs overlap with the factors that influence this process. Thus, such factors may have different levels of importance and may take effect collectively rather than individually. By revealing the association among TPA, TPN, and TPC, this study is suggesting that tourism knowledge production itself should be deemed as a complex system. In such system, research problems serve as an influential sub-system or an invisible agent, which connects tourism knowledge production with its various influencing factors. Knowing more about tourism problems can enhance our understanding of factors that affect tourism knowledge production.

*Practical implication.* This study has selected a group of Chinese researchers as subjects and thus, introduces implications for them (and those they represent). Most importantly, there is a need for these researchers to be aware of the problem system in conducting tourism research. For this purpose, adequate knowledge of the key components in this system should be obtained. Knowledge of paradigm, for instance, can help the researchers avoid paradigm ignorance and paralysis. In the context of China, it is suggested that (a) tourism researchers from leading universities recognize the dominance of post-positivism and avoid providing

tourism knowledge solely based on a single/narrow paradigm, and (b) those from institutions with lower ranks balance their preferred paradigms with post-positivism.

Considering the strong influence of environmental factors on tourism problems, it is suggested that tourism research management bodies (e.g., research committees within institutions, China National Tourism Administration, and National Natural/Social Science Foundation of China) seek ways to tighten their evaluation of tourism research and create a healthier and more simulative external environmental for tourism researchers. At the national level, the current policy concerning the existing stratification of China's education institutions ("985"—"211"—Ordinary—College/Other) should be reviewed. This hierarchical system, although efficient in producing more knowledge, due perhaps to research labor division, has the tendency to sponsor only research that favors certain types of problems. Consequently, biased knowledge is produced. The aforementioned are issues, which research management bodies and policymakers should look into.

## CONCLUSION

This study attempted to understand tourism problems in general terms because problems play an essential role in the entire process of tourism knowledge production. The goal of the study was to build tourism problemology, which refers to a systematic, exclusive, and in-depth study of the nature, antecedent, and consequence of tourism problems. This study was implemented through two broad stages. In the first stage, a theoretical model of tourism problemology was deduced from the emerging literature on problemology (mainly in the philosophy of science). In the second stage, the model was tested/specified by examining a group of tourism researchers in China as a special yet valid sample of the general tourism research community.

Tourism researchers revealed the tendency to define tourism problems as difficulties and contradictions to resolve. This preference was influenced by many factors that are either personal (axiological, ontological, and epistemological beliefs) or environmental (institution types and researchers' perceptions) in nature. Further, different degrees of understanding of tourism problems had notable influence on the researchers' evaluation and selection of tourism problems to solve, which indicates the initial stage of tourism research. Considering that once the problems are determined, the nature of knowledge to be produced (as solved problems) will be set (Laudan, 1977; Popper, 1972), this initial stage of research is crucial to the entire research process.

The major contribution of this study is the provision of a pioneering investigation of tourism problems as a whole. The study discloses various components within a problem system and identifies their major relationships. These findings lead to a quasi-theory on tourism problems. Although such quasi-theory should be further improved, it has laid the foundation for future research. Besides, the present study has offered a general guideline for the establishment of problemology. Building problemology (including tourism problemology) is a challenge if undertaken without combining philosophical insights and empirical exploration. This study—in building a problemology of tourism—not only demonstrates the validity of this proposal, but also shows how it can be executed. The last contribution is

related to the growing reflexivity in tourism knowledge. By analyzing problems and well-recognized influencing factors such as paradigm commitment, this study has shed light on the vague mechanism behind tourism knowledge production. Moreover, the specification of the theoretical model of tourism problemology in different situations can help unmask the linkage between tourism research and its various antecedents.

As preliminary inquiry into an area we have not much knowledge of, this study has encountered limitations. The theoretical model at the third and fourth levels of constructs was not fully specified, due to lack of a priori support from the literature on problemology and the complexity of the model itself. Additionally, the empirical testing of the model was incomplete. Methodologically, the sampling procedure was not strictly random and only a group of researchers in Mainland China was examined, which indicates that the model may have taken on a different structure if other researchers have been involved. The complex and elusive nature of the variables measured in this study prevented a more rigid discussion of the validity and reliability issues.

Future research is recommended to address the aforementioned limitations. The theoretical model developed by this study should be tested in other contexts. Specifically, several areas are worth considering: (a) the quantification of the model by using continuous scales, or by simplifying the model to the degree that allows greater model specification, and (b) the need to adopt qualitative methods such as in-depth interview in examining, in greater detail, the nature of tourism problems and their internal structures. This study has made an adventurous journey into an important yet not fully charted territory of tourism problemology. It is hoped that this effort can draw the attention of tourism researchers beyond merely solving problems toward understanding problems and their influence on tourism research.

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## Statement of Contribution

### 1. What is the contribution to knowledge, theory, policy or practice offered by the paper?

**Knowledge/theory contribution:** (1) a first study on "tourism problemology", an important yet overlooked research topic; (2) offering a quasi theory of tourism problems: a theoretical model of tourism problemology, with its main relationship being empirically specified and justified; (3) indicating the pluralist nature of tourism problemology; (4) indicating that tourism problemology can help unmask the mechanism behind tourism knowledge production; and (5) suggesting that for problemology to mature, a dialogue between philosophical insights and empirical investigation is necessary. **Policy/practice contribution:** (1) a need for tourism researchers to be aware of the 'problem system' in doing research; and (2) a need for tourism research management bodies to seek ways to tighten their evaluation of tourism research and create healthier and more simulative external environmental for tourism researchers in China; and to rethink the current policy concerning the existing stratification of China's education institutions, so as to reduce biased knowledge production.

### 2. How does the paper offer a social science perspective / approach?

**Theoretical ground:** this study applies problemology (the study of problems) mainly from philosophy of science (including natural, social and humanity sub-branches), with clear relationship with social sciences. In a sense, problemology can be seen as a subsystem in sociology of knowledge, unquestionablly an important topic in social sciences. **Research methodology:** it has made a group of tourism researchers from Mainland China as its study objects via semi-structured questionnaire survey, which represents a typical type of research (i.e. survey-based) in social sciences. Its unit of analysis is social groups (tourism researchers in this study), rather than the individuals thereof. **Results and implications:** this study results in a quasi theory of tourism problems with implications for tourism researchers—a group of academics— in rethinking the tourism knowledge production. This theory should belong to the family of social theories.

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**Table 1. Summary of Measurements**

| Variable Category | Measured Variables | Number of Items | Scale Types |
|---|---|---|---|
| **TPN (Primary)** | Problem connotation | 2 | Single-choice; Open-question |
| **TPA (Personal)** | Research interest | 1 | Single-choice |
| | Paradigm commitment | 3 | Ibid. |
| | Research experience | 5 | Blank-filling; Multiple-choice; 5-point Likert |
| | Researcher demographics | 5 | Blank-filling; Single-choice |
| **TPA (Environmental)** | Objective condition | 2 | Ibid. |
| | Subjective perception (micro) | 5 | 7-point semantic differential |
| | Subjective perception (meso) | 5 | Ibid. |
| | Subjective perception (macro) | 5 | Ibid. |
| **TPC (Problem as research initiator)** | Problem proposing | 1 | Open-question |
| | Problem evaluating | 20 | 5-point Likert |
| | Problem selecting | 1 | Open-question |

Note: TPN=Tourism Problem Nature, TPA=Tourism Problem Antecedent, TPC=Tourism Problem Consequence.

**Table 2. TPAs Capable of Predicting Problem Connotation**

| | **β** | **Standardized error** [b] | **df** | **F** | ***p*** |
|---|---|---|---|---|---|
| **Independent Variables** | | | | | |
| Order (Univ.) [a] | -.583 | .341 | 3 | 2.921 | .036 |
| Order (China) | -.506 | .316 | 5 | 2.563 | .030 |
| Rigidity (China) | .445 | .273 | 4 | 2.667 | .035 |
| Epistemological belief | .279 | .107 | 4 | 6.757 | .000 |
| Type of institution | .218 | .102 | 4 | 4.514 | .002 |
| Axiological belief | .209 | .102 | 4 | 4.148 | .003 |
| Ontological belief | .179 | .097 | 4 | 3.427 | .011 |
| | **Adjusted $R^2$** | **F** | ***p*** | | |
| **Model Fit Indices** | .222 | 1.758 | .002 | | |

Note: [a] This variable tests the respondents' perception of their institutions' research milieu, based on whether they are chaotic or ordered (7-point semantic scale). The same holds true for "Rigidity (China)" and "Order (China)." [b] This statistic is based on bootstrap estimation (bootstrap samples=1,000).

**Table 3. Differences in the Evaluation of the 20 Testing Problems among Different Problem Definition Groups**

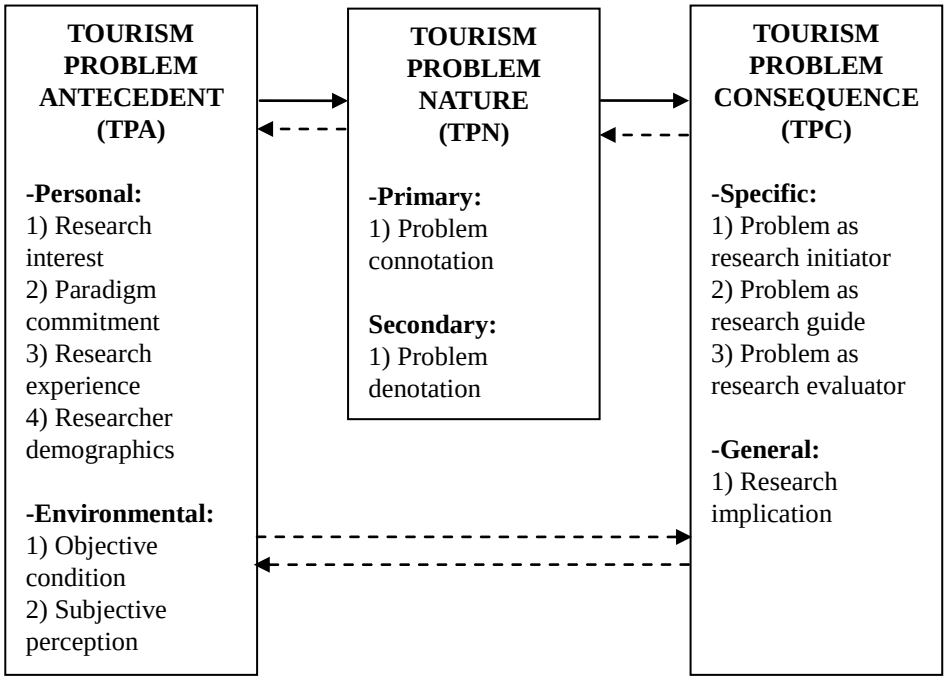
| Problem [a] | Category | Mean [b] | F | Sig. (Two-tailed) |
|---|---|---|---|---|
| #8 Monotony of tourism landscape and its solution | Beauty | 3.679 | 4.781 | .000 |
| #15 Cultural contexts and destination image perception | Truth | 3.670 | 2.195 | .045 |
| #16 Position and nature of tourism as an emerging discipline | Truth | 3.981 | 2.296 | .036 |
| #4 Relationship between responsible tourist behavior and sustainable tourism development | Virtue | 4.019 | 2.260 | .039 |
| #5 Tourism legislation in China | Virtue | 3.920 | 3.159 | .006 |
| #7 Misbehavior of Chinese tourists in foreign destinations and the countermeasures | Virtue | 3.241 | 3.121 | .006 |
| #13 Trust system construction of tourism enterprises | Virtue | 3.726 | 2.928 | .009 |

Note: [a] Due to word limit, only the significant results are presented. [b] The importance of these problems are measured by 5-point Likert scale (1=*very unimportant* to 5=*very important*).

**Table 4. Summary of Research Findings**

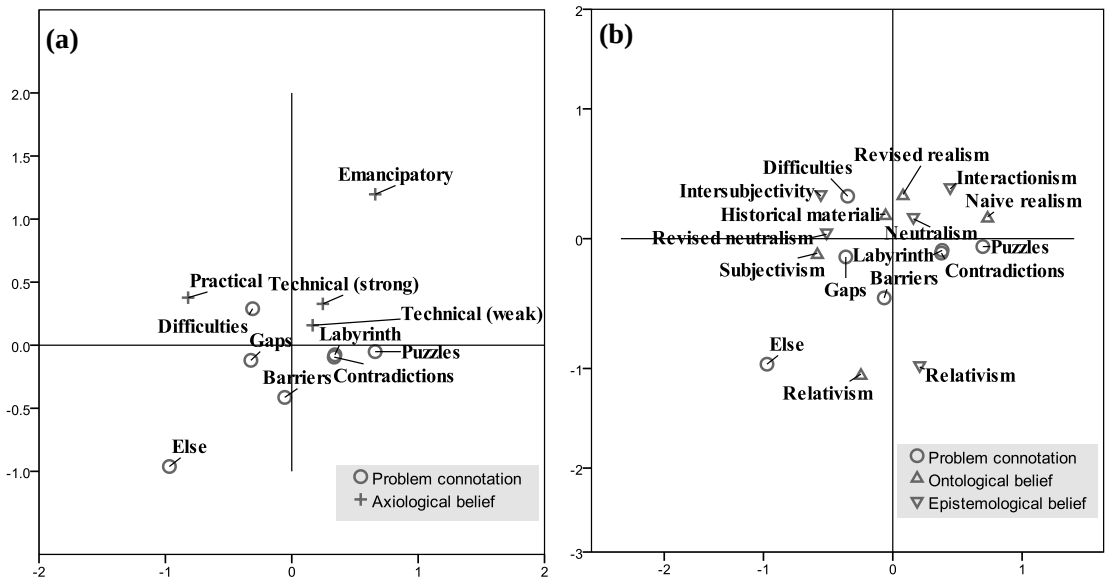
| Group | Personal TPA [a] | | | Environmental TPA | | | | TPN (primary) | TPC (problem as research initiator) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Axiological belief | Ontological belief | Epistemological belief | Type of institution [b] | Order (Univ.) | Rigidity (China) | Order (China) | Problem connotation | Problem evaluation [c] | Problem selection |
| **1** | Practical | Historical materialism | Intersubjectivity; Revised neutralism [d] | Ordinary Univ.; 211 Univ. | 4; 3 | 3; 2 | 2; 3 | Difficulties (39.71%) | 3 | Truth-Virtue -Beauty; Truth |
| **2** | Practical | Subjectivism | Revised neutralism | 211 Univ. | / | / | / | Gaps (6.7%) | 4; 5 | Truth-Beauty; Truth-Virtue |
| **3** | Technical | Naïve realism | Neutralism; Interactionism | 985 Univ. | 5; 6 | 4 | 4; 6 | Contradictions (21.05%) | 4; 5 | Virtue-Beauty |
| **4** | Technical | Naïve realism | Ibid. | 985 Univ. | 6; 7 | 4; 6 | 4; 6 | Puzzles (13.4%) | 3; 4 | Truth-Virtue |
| **5** | Technical | Naïve realism | Neutralism; Interactionism | 985 Univ. | 5; 6 | 4 | 4; 6 | Labyrinth (6.7%) | 2; 1 | Truth-Virtue -Beauty |
| **6** | Mixed | Relativism | Relativism | Others; 211 Univ. | / | / | / | Barriers (9.09%) | 5 | Virtue-Beauty; Beauty |
| **7** | Mixed | Relativism | / [c] | Others | 1 | 1 | 1 | Else (3.35%) | 2; 1 | Virtue |

Note: [a] TPN=Tourism Problem Nature, TPA=Tourism Problem Antecedent, TPC=Tourism Problem Consequence. [b] "985 Univ."=top tier universities in China, "211 Univ."=second top universities in China. [c] The result is based on Figures 3a, 3b, and 3c. [d] For some cells, two variable values are presented because the correspondence analyses found that these cells appeared in similar/close positions to the coordinate. However, the first value was from the major independent variable(s).



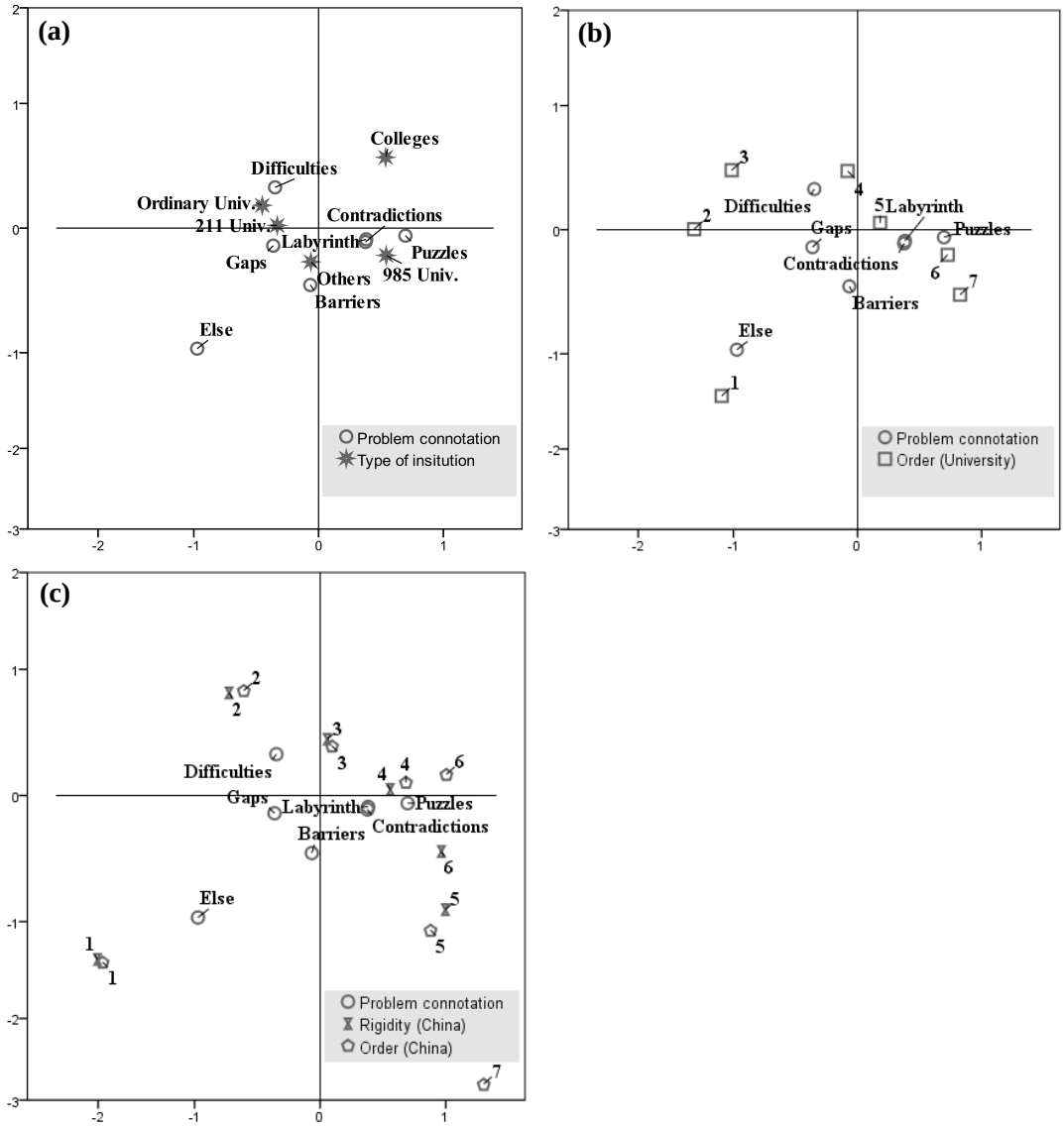

Note: Solid arrows indicate the major effects; dashed arrows indicate minor effects. The differentiation is based on literature and the judgment of the authors of this study.

**Figure 1. Theoretical model of TP**



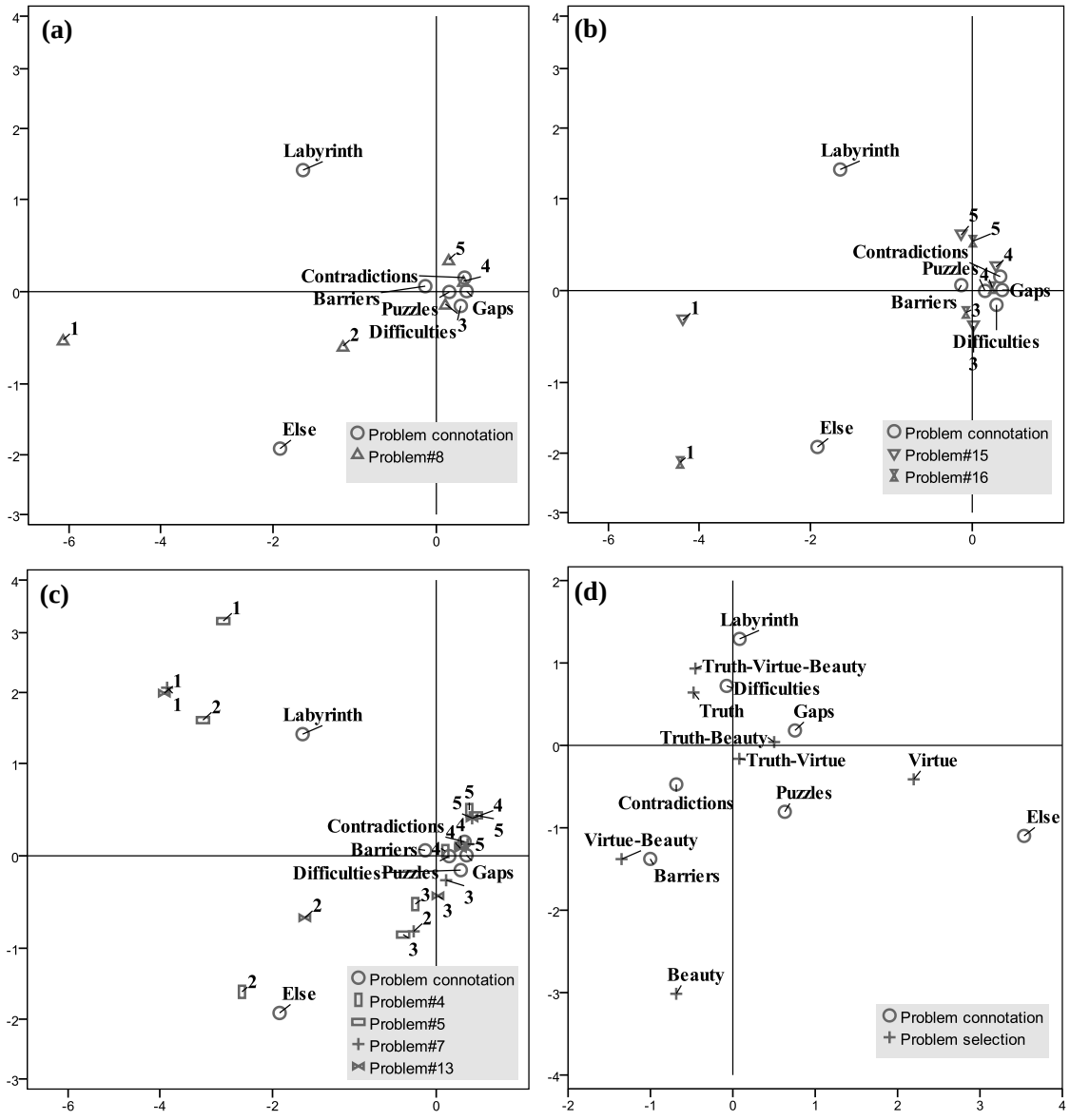

Note: The correspondence analyses adopted principal component normalization.

**Figure 2. Influence of Personal TPA on Problem Connotation**




Note: In Figure 3b, "Order (University)" is measured by 7-point semantic scale (1=*chaotic* to 7=*organized*). In Figure 3c, both "Rigidity (China)" (1=*loose* to 7=*rigid*,) and "Order (China)" (1=*chaotic* to 7=*organized*) are measured in the same way.

**Figure 3. Influence of Environmental TPA on Problem Connotation**




Note: In Figures 4a-4c, the importance of the testing problems is measured by 5-point Likert scale (1=*very unimportant* to 5=*very important*).

**Figure 4. Influence of Problem Connotation on Problem as Research Initiator**