

# 行政院國家科學委員會專題研究計畫成果報告

知識表徵：由詞彙出發之基礎研究—隱喻映照與知識表徵-I

## Metaphor Mapping and Knowledge Representation: Principles and Processing-I

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### 1. 摘要

本研究的主要目的是藉著詞彙的豐富資料，以隱喻在漢語的表現為研究對象，探索單一概念如何表達、延伸；以及如何由典型的單純概念，預測其可能的使用範圍及使用時意義上的伸展與改變，進而探究知識表徵系統的內部構造。

**關鍵詞：**隱喻、映照領域、詞彙歧義分析、跨模組、互動、線上即時、模組、句子處理、語言表徵、映照原則

### Abstract:

The main goal of this research is to investigate how conceptual metaphors represented in Mandarin Chinese in order to have a better understanding in what information is required in the cognitive representation, and how the information is processed within the cognitive architecture of the language processing system.

**Keywords:** metaphor, domain mapping, lexical ambiguity resolution, modularity, interaction, on-line, cross-modal, sentence processing, linguistic representation, mapping principles

### 2. Background

The theoretical issues involved in this project are the following: 1) the principles underlying the mappings between the source and target domains of conceptual metaphors and the associated implications for knowledge representation, as well as the relative productivity and systematicity of these principles.

Current understanding of metaphors within the Contemporary Theory of Metaphor has centered on identifying conceptual metaphors in a particular language, such as the following metaphors in English: TIME IS UNDERSTOOD AS) MONEY, LIFE

IS A JOURNEY, GOOD IS UP, BAD IS DOWN, etc. (Lakoff and Johnson 1980). These are conceptual metaphors, that is, they map one conceptual domain (i.e. money) onto another (i.e. time), as opposed to image metaphors, which map only one visual image onto another visual image. An example of an image metaphor is: 'Her waist is an hour-glass.' The visual image of the shape of an hour-glass is mapped onto the waist.

Image metaphors are 'one-shot' deals, unlike conceptual metaphors which allow many concepts in the source domain to be mapped onto corresponding concepts in the target domain. Conceptual metaphors exist at one end of the continuum of productivity, while image metaphors exist at the other (non-productive) end.

The concepts that are mapped in conceptual metaphors are called image-schemas. For example, in the conceptual metaphor LIFE IS A JOURNEY we find the following metaphorical usages in English, as in (1).

(1a) He's cruising down the highway of success.

(1b) You'd better slow down and think about what you want to do with your life.

(1c) She lives her life in the fast lane.

All these examples have to do with the image schema of *speed*. *Speed* in the source domain of JOURNEY relates to

the speed at which the journey (usually in a car) takes place. This image-schema maps onto the *speed* at which LIFE takes place.

Lakoff (1993) proposes the Invariance Principle to guarantee that the mapping is consistent in the both the source and target domain. The Invariance Principle states:

Metaphorical mappings preserve the cognitive topology (that is, the image-schema structure) of the source domain, in a way that is consistent with the inherent structure of the target domain (p 215)

Thus, given the Invariance Hypothesis, *speed* could not map onto the *direction* that one is going in the LIFE IS A JOURNEY metaphor. *Direction* is a different image-schema that exists in a JOURNEY and may or may not map onto LIFE in the LIFE IS A JOURNEY metaphor.

This question of what image-schemas may and may not map has only recently been addressed in the literature, and to our mind is one reason that cognitive semantic work in metaphor is seen by some as ad hoc. Clausner and Croft (1997) propose that 1) specifying a metaphor at its appropriate level of schematicity, and 2) carefully describing the semantic structure can constrain the concepts (image-schemas) that can map in a metaphor.

For example, they argue that the metaphor **AN ARGUMENT IS A BUILDING** is too broad and should instead be **AN ARGUMENT IS THE STRUCTURAL INTEGRITY OF A BUILDING**. The revised conceptual metaphor predicts that concepts such as 'foundation' would be used in the metaphor, but concepts such as 'chimney' and 'plumbing' would not, because they are not part of the structural integrity of a building.

However, we feel that their conclusions, while in essence correct, are formulated in the wrong direction. We instead propose that determining the image-schemas that map for a certain conceptual metaphor will determine the appropriate level of schematicity for a conceptual metaphor. For instance, in the example above, examples of the **ARGUMENT IS A BUILDING** should be generated, and the image-schemas should be grouped (i.e. foundations) and once that has been done, a proposal can be made for selecting a particular level of schematicity.

The analysis the specific image-schemas that are relevant to a particular conceptual metaphor is important because it allows us to hypothesize if a word from the source domain may or may not be mapped to the target domain. Finally, analyzing specific image schemas over a range of conceptual metaphors will allow us to better understand the types of image-schemas that are universal to the

human conceptual system.

### 3. Goals and Results

We have completed the following steps:

1. Determine image-schematic mappings for 31 conceptual metaphors in Mandarin Chinese.
2. Postulate the principles underlying the image-schematic mappings between the source and target domains of conceptual metaphors.

In brief, we have analyzed the following target domains: **IDEA**, **LOVE**, **LIFE**, **DEATH**, **SUCCESS**, **WORDS**, **HAPPINESS**, and **ANGER**. We have found the following metaphorical mappings for each of these target domains.

- IDEA**
1. **IDEA IS A BUILDING**
  2. **IDEA IS FOOD**
  3. **IDEA IS A BABY**
  4. **IDEA IS A COMMODITY**
  5. **IDEA IS A FASHION**
- LOVE**
6. **LOVE IS FIRE**
  7. **LOVE IS A PLANT**
  8. **LOVE IS RUNNING WATER**
  9. **LOVE IS BAGGAGE**
  10. **LOVE IS A NET**
  11. **LOVE IS LIQUOR**
- LIFE**
12. **LIFE IS A JOURNEY**
  13. **LIFE IS A RACE**
  14. **LIFE IS A COMPETITION**
  15. **LIFE IS A PLAY**
  16. **LIFE IS A SONG**
- DEATH**
17. **DEATH IS DEPARTURE**
  19. **DEATH IS AN END POINT**
  20. **DEATH IS SLEEP**

### SUCCESS

21. SUCCESS IS A DESTINATION
22. SUCCESS IS A PLANT
23. SUCCESS IS A GATE

### WORDS

24. WORDS ARE WEAPONS

### HAPPINESS

25. HAPPINESS IS RUNNING WATER
26. HAPPINESS IS A PLANT
27. HAPPINESS IS MEDICINE
28. HAPPINESS IS POSSESSION

### ANGER

29. ANGER IS FIRE
30. ANGER IS AIR
31. ANGER IS AN EXPLOSIVE

We propose that investigating the image-schemas that map for a certain conceptual metaphor will determine the appropriate level of schematicity for a conceptual metaphor. For instance, for the metaphor IDEA IS A BUILDING, examples of the IDEA IS A BUILDING metaphor are generated, and the image-schemas are grouped (i.e. foundations, shakiness, creation) and once that has been done, a proposal is made for selecting a particular level of schematicity. For example, in our current research, we have found that there are four basic image schemas that can be mapped from the source to the target domain in the metaphor IDEA IS A BUILDING in Mandarin Chinese (i.e. foundation, structure, stability and the creation of the building.) The six examples given below give examples of these mappings.

1. 你的論點 根基 是什麼?  
nide lundian genji shi sheme  
your argument base be what  
'What is the foundation of your argument?'
2. 這篇文章的 架構  
Zhe pian wenzhang de jiagou  
this CL article MOD frame  
很 鬆散  
hen songsan  
very loose  
'The argument of this article is very loose.'
3. 這群文人正  
zhe qun wenren zheng  
this group scholar at the present  
努力 建構 一套理論  
nuli jiangou yi tao lilun  
work hard build one set theory  
'This group of scholars is working hard at constructing a theory.'

We have found that the mappings that occur within each conceptual metaphor (such as IDEA IS A BUILDING) can be categorized into three areas: entities (I), qualities (II) and functions (IIIa, b). For each metaphor we ask the following questions (the answers given with underlines are the answers for the IDEA IS A BUILDING metaphor).

- I. What entities does the SD have that are mapped to the TD?  
-- foundation, base, model (cf. ex. 1)
- II. What qualities does the SD (or the entity in the SD) have that are mapped to the TD?  
-- loose, shaky (cf. ex. 2)
- III a. What does the SD do that is mapped to the TD?  
-- none

b. What can S/O do to the SD that are mapped to the TD?  
-- to build, to construct, to deconstruct (cf. ex.3)

After analyzing the mappings, we draw up mapping principles for each conceptual metaphor. For example, in our current project, we have determined the image-schemas for the IDEA IS BUILDING metaphor for Chinese (see Figure 1). The three image-schemas that can map are foundation, stability and creation/destruction. The principle underlying the mapping is that idea is understood as building because ideas have structure. The mapping schemas and principles for the other thirty metaphors have been completed as well.

The findings that we have to date are being disseminated in Ahrens and Huang (2000), Ahrens (2000) and Ahrens (Under Review).

#### 4. Conclusion

The question that we have answered in the current project year is WHAT information is required in the cognitive representation of metaphor mappings -- something that was not at all clear at the current stage of understanding metaphors. The findings related to what information is required have added to a deeper understanding of image-schema mappings within the Contemporary Theory of Metaphors. It has also added to cross-linguistic data,

which will in turn has aided in our understanding of which metaphors are language-specific and which ones are possibly universal.

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