

## **STOCK MARKETS AS OCEAN WATER: A Corpus-based, Comparative Study of Mandarin Chinese, English and Spanish**

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### **Abstract**

To what degree do different languages share similar conceptual metaphors? Charteris-Black and Ennis (2001) examined this question by running a comparative, corpus-based study of metaphors in Spanish and English financial reporting. They argue that both languages show considerable similarity in the choice of conceptual metaphors with the same linguistic expressions but that there is a differing degree of frequency. They attribute this similarity to the common cultural identity of the two languages such as the similar economic system and their Latinate origins. In this paper, we use a corpus-based approach in comparing the choice of conceptual metaphors in Mandarin Chinese with those of Spanish and English. We focus our discussion on the conceptual metaphor STOCK MARKET IS OCEAN WATER in Mandarin Chinese and compare it with the Spanish and English data. We carry out our analysis within the framework of the Conceptual Mapping (CM) Model (Ahrens 2002). With this model, we are able to demonstrate that although different languages share similar conceptual metaphors, they differ in what is mapped linguistically. These differences can be shown in their specific Mapping Principles.

### **1 Introduction**

The language of economy frequently involves conceptual metaphors. Charteris-Black (2000), for instance, suggested that the metaphoric lexis in the *Economist* were higher in frequency than in a general magazine. In describing the movement of the economy, in particular, there are expressions relating to the directions of the economic situation (up and down) and the speed of the economic development (Chung, Ahrens and Huang, 2003b).

In this paper, two Mandarin Chinese newspaper corpora will be examined in terms of occurrences of conceptual metaphors related to the target domain of *gushi* 股市 'STOCK MARKET.' Among the recurring metaphors found, the metaphor STOCK MARKET IS OCEAN WATER constitutes the majority of the linguistic expressions. This paper focuses on this conceptual metaphor and compares it with the English and Spanish data analyzed by Charteris-Black and Ennis (2001).

In Charteris-Black and Ennis (2001), the metaphor MARKET MOVEMENTS ARE NAUTICAL OR ARE WAYS OF MOVING IN THE WATER is suggested for expressions relating to the domain of OCEAN WATER. This paper looks at their examples in detail and compares the Chinese data with their analysis. Working within the Conceptual Mapping (CM) Model (Ahrens, 2002), this paper proposes while the source and target domains may be similar across different languages, the linguistic expressions that are mapped in each language can differ within each language. These differences in mappings can be captured using the CM Model by postulating a Mapping Principle for the source-target domain mapping.

## 2 The Conceptual Mapping (CM) Model

The CM Model is a model based within the Contemporary Theory of Metaphor (Lakoff and Johnson 1980, Lakoff 1993), and shares with it the idea that metaphors have systematic source to target domain pairing. However, it goes beyond the CTM to postulate that the systematic pairings are principled and that these principles can be formulated from a linguistic analysis of the conventional metaphorical expressions (Ahrens 2002). For instance, using the CM Model, Ahrens (2002) analyzed IDEA AS BUILDING via five main stages. First, within the target domain of IDEA, native speakers generated all items related to IDEA. Then, these items were categorized into similar source domains such as BUILDING and FOOD. Third, for each source domain, three questions were asked in order to generate the conceptual real world knowledge regarding this source domain. These questions are as follows (with sample answers taken from Ahrens' analysis for IDEA AS BUILDING in Mandarin Chinese):

### 1. What entities does the SD have?

-- (for BUILDINGS: foundation, structure, model, base, etc.)

### 2. What quality does the SD or the entity in the SD have?

-- (shaky, high, short, strong, etc.)

### 3a. What does the SD do?

-- (to protect, to shield, etc.)

### b. What can somebody do to the SD?

-- (to live in, to build, etc.)

The fourth stage involved filtering out non-conventional expressions obtained in stage one. At the fifth stage, the actual mappings between IDEA and BUILDING were compared with what could possibly be mapped in the real world. By comparing the linguistic data (obtained at stage one) with the expressions from the real world knowledge, one can postulate why a target domain uses a particular source domain. For IDEA AS BUILDING in Mandarin Chinese, the following examples were given (Ahrens, 2002: 277-278):

(1) 這個 理論 架構 很 鬆散。  
*zhege lilun jia gou hen song san*  
 this theory frame very loose  
 'The framework of this theory is loose.'

(2) 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?'

(3) 這 群 文人 正 努力 建構 一 套 理論。  
*zhe qun wenren zheng nuli jiangou yi tao lilun*  
 this group scholar at\_the\_present work\_hard build one CLASS theory  
 'This group of scholars is working hard at constructing a theory.'

From example (1) to (3), IDEA (*lilun* 理論 'theory' and *lundian* 論點 'argument') in Mandarin Chinese often selects the source domain of BUILDING (*jia gou* 架構 'framework,' *genji* 根基 'base' and *jiangou* 建構 'build'). These linguistic expressions comprise Entities (nouns), Functions (verbs) and Qualities (adjectives).

Based on the examples such as (1) to (3), Ahrens (2002:279) postulated that "the target domain of IDEA uses the source domain of BUILDING in order to emphasize that concept of structure." To put this correspondence in formal wordings, a 'Mapping Principle' was proposed. This mapping principle

provides the reason underlying the mapping of source to target domains. For IDEA AS BUILDING, the mapping principle is as follow (Ahrens 2002: 279):

*Idea (originally capitalized) is understood as building because buildings involve a (physical) structure and ideas involve an (abstract) structure.*

Chung, Ahrens and Huang (2003a, 2003b) have looked at economy metaphors occurring within the source domains of PERSON and TRANSPORTATION\_DEVICE (such as MOVING VEHICLES and AEROPLANE) respectively. They suggested that the most prototypical mappings in the corpora for these conceptual metaphors are used in formulating the Mapping Principle. This paper also adopts an empirical analysis of corpora by formulating Mapping Principle from the most frequent mappings in the Mandarin Chinese corpora.

### 3 Methodology

Using the CM Model in our analysis, we analyze the metaphor of STOCK MARKET IS OCEAN WATER in Mandarin Chinese. We compare our findings with Charteris-Black and Ennis's (2001) analysis of the English and Spanish data. Our sources are from the Internet postings of business news including:

(a) *huashishingwen* front page TV news (華視新聞焦點) taken from the webpage of <http://www.cts.com.tw> between 24 October 1997 and 7 November 1997; and

(b) business news in *gungshangshibao* (工商時報) taken from the webpage of <http://www.chinatimes.com> between 24 October 1997 and 7 November 1997.

Both of these sources provide news reported in Taiwan over roughly the same period of time as Charteris-Black and Ennis's (2001) corpora. The search for *huashishingwen* (華視新聞焦點) was limited to the front page news but the search for *gungshangshibao* (工商時報) covered all the sections of the newspaper. A total of 120 financial reports were collected from these two sources. Among the 120 financial reports collected, 22 articles were taken from the *huashishingwen* spoken data (accompanied by written reports and the analysis was based on the written reports) and 98 were taken from *gungshangshibao*. These two corpora contain 97,156 characters (with MSW word count). This amount of characters was divided by 1.4 to make the Chinese characters comparable to words citation. This produced 69,397 words in total.

For the analysis, we first searched for the key term *gushi* 'stock market' (股市) using the search engine in Microsoft Word. All the instances of *gushi* were extracted. A metaphor is identified when there is a mapping from a mapping of *gushi* to a concrete domain such as (OCEAN) WATER in the following example.

(4) 拉丁美洲 股市 也都 跟著 大漲  
*lading meizou gushi yedou genze dazhang*  
 Latin America stock\_market also follow big-rise  
 Literal: 'The Latin American stock market also followed suit in the rising.'

The underlined word belongs to the domain of OCEAN WATER and the bracketed words belong to the domain of the STOCK MARKET. These identified metaphors were then categorized according to the different of metaphors (STOCK MARKET IS OCEAN, STOCK MARKET IS DISASTER, etc.). The instances of expressions within each type of metaphor were counted. We then calculated the frequency of each instance of metaphor by finding out the percentage these metaphors constitute in the two corpora.

Our analysis yielded 135 tokens of economy metaphors, with 4 recurring patterns of economy metaphors. These 4 metaphors are shown in Table 1.

**Table 1: All ‘Stock Market’ Metaphors found in the Mandarin Chinese Corpora**

| Metaphors                             | Tokens     |
|---------------------------------------|------------|
| <b>1. STOCK MARKET IS OCEAN WATER</b> | <b>58</b>  |
| 2. STOCK MARKET IS WAR                | 25         |
| 3. STOCK MARKET IS A DISASTER         |            |
| (a) STOCK MARKET IS A STORM           | 16         |
| (b) STOCK MARKET IS AN EARTHQUAKE     | 17         |
| 4. STOCK MARKET IS A PERSON           | 19         |
| <b>Total</b>                          | <b>135</b> |

From Table 1, the source domain of OCEAN WATER constitutes the majority of the total number of metaphors found. This is followed by the source domain of WAR. The domain of DISASTER comprises two sub-domains, i.e., the source domains of STORM and EARTHQUAKE. The fourth recurring pattern occurs within the domain of PERSON. These recurring metaphors are defined by their frequency of tokens found in the two news corpora. Other metaphors with lower frequency of occurrences are THE FALL OF THE STOCK MARKET IS CHAIN (1 token) and STOCK MARKET IS GAMBLING (3 tokens).

The following examples (5) to (9) provide instances of occurrences for each of the metaphors in Table 1.

**(5) STOCK MARKET IS (OCEAN) WATER**

其間 股市 起起伏伏  
*chijian gushi chichifufu*  
 that-within stock\_market up-up-down-down  
 ‘Between that (period), the stock market rises and falls.’

**(6) STOCK MARKET IS WAR**

BM 紐約 股市 大反彈 幕後 功臣  
*BM neuyue gushi dafantan muhou gungchen*  
 BM New\_York stock\_market big-bouncing\_back\_curtain-back success-minister  
 Literal: ‘The minister behind that caused the bouncing back of the New York stock market’

**(7) STOCK MARKET IS A STORM**

再度 籠罩 在 全球 股市 風暴  
*zaidu lungzao zai quanqiu gushi fengbao*  
 again cover PREP whole-world stork\_market storm  
 的 烏雲 中  
*de wuyun zhong*  
 DE dark-cloud middle  
 ‘(something) was again covered by the storm of the worldwide stock market.’

**(8) STOCK MARKET IS AN EARTHQUAKE**

週五 紐約 股市 震盪 激烈  
*zouwu neuyue gushi zhendang jilie*  
 Friday New\_York stock\_market quake strongly  
 Literal: ‘On Friday, the New York stock market was shaken strongly.’

(9) **STOCK MARKET IS A PERSON**

連續 上漲 五天 的 國內 股市，  
*lianxu shangzhang wutian de guonei gushi*  
 continuous up-rise five-day DE country-inside stock\_market  
 今天 顯得 有些 疲軟  
*jintian xiande youxie piruan*  
 today seem Exist-little tired-soft  
 Literal: ‘The nation stock market that has been rising continuously for the past five days seems softened and tired today.’

The examples of metaphors with lower frequencies are shown in (10) and (11):

(10) **THE FALL OF THE STOCK MARKET IS CHAIN**

港股 崩盤 迅速 引發 全球  
*ganggu bengpan sudu yingfa quanqiu*  
 HK-stock collapse speed cause\_to\_happen whole-world  
 股市 下跌 的 連鎖反應  
*gushi xiadie de lianshuofanying*  
 stock\_market down-fall DE chain\_reaction  
 ‘The collapse of the stock market of Hong Kong has caused the fall of the world’s stock market in a chain reaction.’

(11) **STOCK MARKET IS GAMBLING**

股市 動能 籌碼 受到 極大 的 排擠  
*gushi dungneng couma shoudao jida de paiji*  
 stock\_market momentum chips receive-reach very-big de discriminate  
 Literal: ‘The movements of the chips (investment) in the stock markets has received a certain degree of discrimination.’

The source domains of CHAIN and GAMBLING are also found in related target domains such as FINANCE and CURRENCY. However, for the purpose of this paper, the delimitation of the target domain to the key term *gushi* 股市 ‘stock market’ has reduced the frequencies of these two metaphors in this paper. In related economy metaphors (i.e., FINANCE and CURRENCY), there are more mappings using these source domains.

In addition to these conceptual metaphors represented in examples (5) to (11), there are also image metaphors found. These image metaphors include STOCK MARKET IS A BALL (*fantan* 反彈 ‘rebound’) and STOCK MARKET IS A FALLING OBJECT (such as *dadie* 大跌 ‘big-fall,’ *diedaogudi* 跌到谷底 ‘fall until the bottom of the valley’ and *wangxiatandi* 往下探底 ‘go toward the bottom.’)

This present paper will focus particularly on STOCK MARKET IS OCEAN WATER. The other metaphors will be looked at in future papers.

#### 4 STOCK MARKET IS OCEAN WATER

From our data of Mandarin Chinese, we obtained the majority of STOCK MARKET IS OCEAN WATER. These instances are shown in Table 2.

**Table 2: Instances of STOCK MARKET IS OCEAN WATER**

| E/Q/F        | Metaphors                      | Tokens    | Percentages    |
|--------------|--------------------------------|-----------|----------------|
| Entities     | 漲 (rise)                       | 5         | 8.62%          |
|              | 漲勢 (rally)                     | 1         | 1.72%          |
|              | 起伏、起起伏伏 (rising and subsiding) | 3         | 5.17%          |
| Qualities    | 漲 (rising)                     | 8         | 13.79%         |
| Functions    | 漲 (rise)                       | <b>25</b> | <b>43.10%</b>  |
|              | 上漲 (rise up)                   | 15        | 25.86%         |
|              | 起伏 (rise and subside)          | 1         | 1.72%          |
| <b>Total</b> |                                | <b>58</b> | <b>100.00%</b> |

Most of the expressions in Table 2 have to do with the rising of tides. There are also examples which refer to the up-and-down of the ocean water (*chifu* 起伏 ‘up-down’ and *chichifufu* 起起伏伏 ‘up-up-down-down’ (cf. example 5).

The expressions containing the function term (verb) 漲 ‘rise’ constitute 43.10% of the total tokens, which is the most prototypical occurrence in this conceptual metaphor. This indicates that rising tide corresponds strongly with the stock market in Mandarin Chinese. Examples of this metaphor are shown in (12) and (13).

- (12) 澳洲 股市 創下 漲幅 最高 記錄  
 aozhou gushi chuangxia zhangfu zuigao jiru  
 Australia stock\_market make\_record-down rise-degree most-high record  
 Literal: ‘The Australian stock market has marked the highest record of rises.’

- (13) 南韓 股市 則 是 小漲 局面  
 nanhan gushi ze shi xiaozhang jumian  
 south-Korea stock\_market on\_the\_other\_hand BE small-rise condition  
 Literal: ‘On the other hand, the stock market of South Korea has risen minimally.’

From the most prototypical mappings in Table 2, we postulate the following mapping principle for STOCK MARKET IS OCEAN WATER:

*Stock market is an ocean because oceans have tides (that rises) and stock markets have upswings.*

For English and Spanish, Charteris-Black and Ennis (2001) suggested MARKET MOVEMENTS ARE NAUTICAL OR ARE WAYS OF MOVING IN THE WATER. Their examples include ‘plunge,’ ‘weather the storm,’ ‘haven,’ ‘ripples,’ ‘tide,’ ‘floating,’ ‘calm,’ ‘bale out,’ ‘dive,’ ‘anchor,’ ‘fair weather’ and ‘flagship.’ These examples with their frequencies of occurrences are listed in Table 3.

**Table 3: Expressions for English Metaphors**

| Lexis                     | Frequency |
|---------------------------|-----------|
| <b>Plunge</b>             | 9         |
| <i>*Weather the storm</i> | 3         |
| <i>Haven</i>              | 3         |
| <b>Ripples</b>            | 3         |
| <i>Turn tide</i>          | 2         |
| <b>Floating</b>           | 2         |
| <i>Calm</i>               | 1         |
| <b>Bale out</b>           | 1         |
| <b>Dive</b>               | 1         |
| <b>Anchor</b>             | 1         |
| <i>*Fair weather</i>      | 1         |
| <b>Flagship</b>           | 1         |

Since sample sentences for these expressions were not listed in Charteris-Black and Ennis (2001), our analysis is based on the list of words in Table 3.

From the list of words in Table 3, we suggest dividing the source domain into three: BOAT and OCEAN WATER and WEATHER. Therefore, we can see from Table 3 that this source domain of “nautical or are ways of moving in the water” is not a coherent conceptual domain. The CM Model, contrastingly, requires coherent conceptual domain, i.e., one where speakers can consistently list members of that domain (cf. Rosch and Mervis, 1975).

Using the CM Model, the re-categorization of the list of words in Table 3 (under the source domains of BOAT and OCEAN WATER) is shown in Table 4.

**Table 4: Re-analysis of the English Data**

| STOCK MARKET IS A BOAT |           | STOCK MARKET IS OCEAN WATER |           |
|------------------------|-----------|-----------------------------|-----------|
| Lexis                  | Frequency | Lexis                       | Frequency |
| <i>Plunge</i>          | 9         | <i>Haven</i>                | 3         |
| <i>Ripples</i>         | 3         | <i>Turn tide</i>            | 2         |
| <i>Floating</i>        | 2         | <i>Calm</i>                 | 2         |
| <i>Bale out</i>        | 1         |                             |           |
| <i>Dive</i>            | 1         |                             |           |
| <i>Anchor</i>          | 1         |                             |           |
| <i>Flagship</i>        | 1         |                             |           |
| <b>Total</b>           | <b>18</b> | <b>Total</b>                | <b>7</b>  |

The metaphor STOCK MARKET IS A BOAT relates the stock market with the movement of boats (‘flagship’) in the ocean which ‘plunge’ and ‘dive’ (as of submarine), ‘floats,’ ‘anchor’ and create ‘ripples’ when moving in the ocean. From Table 4, the most prototypical mapping occurs with the word ‘plunge,’ with a total of 9 tokens. The following mapping principle for STOCK MARKET IS A BOAT is proposed for the English data:

*Stock market is a boat on open water because a boat moves in a direction on the water and the stock market moves in a direction in the economy.*

For STOCK MARKET IS OCEAN WATER in Table 4, there are only 7 tokens found. These instances are too few to form a mapping principle for this metaphor. By simply analyzing these terms (‘haven,’ ‘turn tide’ and ‘calm’), the English data do not seem to map onto the rising of the tides when referring to OCEAN WATER. To further examine this view, section 5 of this paper will look at another English corpus, i.e., the Wall Street Journal 1994 for comparing our analysis with

the data of Charteris-Black and Ennis. Before that, the Spanish data will be looked at in comparison to Mandarin Chinese and English.

For the Spanish data, the expressions listed by Charteris-Black and Ennis (2001) are shown in Table 5.

**Table 5: Expressions for Spanish Metaphors**

| Lexis                       | English Translation   | Frequency |
|-----------------------------|-----------------------|-----------|
| <i>Ola de ventas/panico</i> | Wave of selling/panic | 2         |
| <i>Turbulencia</i>          | Turbulence            | 2         |
| <i>*Tocar fondo</i>         | Bottom out            | 1         |
| <i>Ancla</i>                | Anchor                | 1         |
| <i>Mar de oportunidades</i> | Sea of opportunities  | 1         |

These expressions are also claimed to reflect the metaphor MARKET MOVEMENTS ARE NAUTICAL OR ARE WAYS OF MOVING IN THE WATER. Similar with the English data, there are terms which do not seem to fall within the source domain suggested. For instance, the term *tocar fondo* ‘bottom out’ is neither ‘nautical’ nor ‘ways of moving in the water.’ The word *ancla* ‘anchor’ is also found in the English data which has been re-categorized under the source domain of BOAT. The shaded expressions in Table 5 may relate to OCEAN WATER. However, since we are not provided with the full sentence, we assume that these terms are referring to the stock market. From the limited expressions provided in Table 4, we can only deduce that the Spanish may emphasize on the unpredictability of OCEAN (except for *ancla* ‘anchor,’ which belongs to BOAT). Our re-categorization of these terms is shown in Table 6.

**Table 6: Re-analysis of the English Data**

| STOCK MARKET IS A BOAT |           | STOCK MARKET IS OCEAN WATER |           |
|------------------------|-----------|-----------------------------|-----------|
| Lexis                  | Frequency | Lexis                       | Frequency |
| <i>Ancla</i>           | 1         | <i>Ola de ventas/panico</i> | 2         |
|                        |           | <i>Turbulencia</i>          | 2         |
|                        |           | <i>Mar de oportunidades</i> | 1         |
| <b>Total</b>           | <b>1</b>  | <b>Total</b>                | <b>5</b>  |

Similar with the category of STOCK MARKET IS OCEAN WATER in English, both the conceptual metaphors in Table 6 are too few in frequency to generate a mapping principle for these metaphors. However, the re-analysis of the English and Spanish data have shown that the terms listed in the source domain of MARKET MOVEMENTS ARE NAUTICAL OR ARE WAYS OF MOVING IN THE WATER are not coherent members of the categories. They can be re-categorized into source domains such as BOAT and OCEAN WATER, as indicated in Tables 4 and 6.

## 5 Discussion

The following Table 7 summarizes the metaphor STOCK MARKET IS OCEAN WATER in Mandarin Chinese, English and Spanish.

**Table 7: Comparison of STOCK MARKET IS OCEAN WATER in Mandarin Chinese, English and Spanish**

| Mandarin Chinese                  |           | English      |          | Spanish                     |          |
|-----------------------------------|-----------|--------------|----------|-----------------------------|----------|
| Metaphors                         | Tokens    | Metaphors    | Tokens   | Metaphors                   | Tokens   |
| 漲 (rise)                          | 5         | Haven        | 3        | <i>Ola de ventas/panico</i> | 2        |
| 漲勢 (rally)                        | 1         | Turn Tide    | 2        | <i>Turbulencia</i>          | 2        |
| 起伏、起起伏伏<br>(rising and subsiding) | 3         | Calm         | 2        | <i>Mar de oportunidades</i> | 1        |
| 漲 (rising)                        | 8         |              |          |                             |          |
| 漲 (rise)                          | 25        |              |          |                             |          |
| 上漲 (rise up)                      | 15        |              |          |                             |          |
| 起伏 (rise and subside)             | 1         |              |          |                             |          |
| <b>Total</b>                      | <b>58</b> | <b>Total</b> | <b>7</b> | <b>Total</b>                | <b>5</b> |

From Table 7, the Chinese seems to select the rises of tides to map onto the rises of the stock market. In English, there is no emphasis on the rises of tides. Rather, there are mappings related to the ‘calmness’ and safety of ‘haven’ of the ocean. In Spanish, there are mappings of ‘waves’ (*ola*), ‘turbulence’ (*turbulencia*) and ‘sea’ (*mar*). From our analysis of the Chinese data and the limited data of English and Spanish, there seems to be differences in the mappings of OCEAN WATER in the three languages.

In order to gain more access into the English data, we have carried out another analysis based on a subset of 500 examples from the Internet corpus of Wall Street Journal 1994 (available at the Linguistic Data Consortium, University of Pennsylvania).

The English data in the Wall Street Journal 1994 also contain the metaphor STOCK MARKET IS A BOAT, a metaphor not identified in the Mandarin Chinese corpora. This result complies with our re-categorization of the English data in Table 4. In Table 8 below, the terms related to these source domains and their frequency of occurrences are shown.

**Table 8: Metaphors with the source domains related to WATER in the Wall Street Journal 1994**

| STOCK MARKET IS RUNNING WATER |          | STOCK MARKET IS A BOAT |           | STOCK MARKET IS OCEAN WATER |          |
|-------------------------------|----------|------------------------|-----------|-----------------------------|----------|
| Metaphors                     | Tokens   | Metaphors              | Tokens    | Metaphors                   | Tokens   |
| churning                      | 1        | plunge                 | 3         | surge (high/ahead)          | 4        |
| liquidity                     | 2        | to ride                | 2         | resurgence                  | 2        |
|                               |          | sinking                | 1         |                             |          |
|                               |          | afloat                 | 1         |                             |          |
|                               |          | to rock                | 1         |                             |          |
|                               |          | to bail out            | 1         |                             |          |
|                               |          | to dive                | 1         |                             |          |
| <b>Total</b>                  | <b>3</b> | <b>Total</b>           | <b>10</b> | <b>Total</b>                | <b>6</b> |

Among the source domains in Table 8, the expressions ‘surge’ and ‘resurgent’ are more closely related to the movements of the waves in the ocean. Examples of STOCK MARKET IS OCEAN WATER in English are given in (14) and (15).

- (14) with a return of 17.26 % as Japan's stock market surged ahead while neighboring Pacific markets slid.

- (15) Any resurgence in the U.S. stock market would likely be interpreted as a positive sign by copper traders.

The expressions within the source domain of OCEAN WATER in Table 8 can be understood as referring to water surging in waves, similar to the mappings found in Mandarin Chinese.

From our investigation in this paper, all three languages (i.e., Mandarin Chinese, English and Spanish) map onto the source domain of OCEAN WATER. Based on the data of Mandarin Chinese data and the Wall Street Journal 1994, English shares similar mapping with Mandarin Chinese when the source domain of OCEAN WATER is used. The Spanish data are too few to make comparisons in terms of Mapping Principles. However, within the source domain of OCEAN WATER, all three languages display different linguistic expressions that are being mapped. The CM Model is advantaged in this aspect since it provides a bottom-up approach in tackling the conceptual metaphors from the linguistic expressions found in each language.

## 6 Conclusion

From comparing metaphor cross-linguistically, we propose that different languages may require different linguistic aspects for target-source domain mappings. These specific linguistic aspects can be captured using the CM Model by specifying the source domain clearly and by extracting the relevant mapping principles across different languages. This is what sets the CM Model apart from the CTM.

For future research, we will look into more instances of STOCK MARKET and its mappings with the source domains of BOAT and OCEAN in different languages. Our first step is to collect more English data from sources such as the ICAME and the Lancaster-Oslo/ Bergen (LOB) Corpora. Then we will proceed to look at other source domains such as NATURAL DISASTER.

In order to make the selection of the source domains more automatized, our future work also comprise delimiting the knowledge (source) domains of these STOCK MARKET metaphors using an upper ontology such as SUMO (Suggested Upper Merged Ontology). The use of SUMO will help to reducing the manual analysis that we have carried out in this paper. For instance, in Chung, Ahrens and Huang (2003b) the 'speed' and 'direction' of the economic movements are related to TransportationDevice. Hence, the language of economy and stock market is a resourceful corpus for metaphor analysis.

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