'Mental Distance' Concept for Chronological Metaphor Analysis of Business Executive Speeches

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Abstract

This paper attempts to demonstrate the hypothetical 'Mental Distance' concept, which will help analyze the chronological changes of linguistic metaphorical expressions within a single business speech. Many researchers have studied the roles of conceptual metaphor and its linguistic metaphorical expressions in critical metaphor analysis. Nonetheless, little research has been conducted, which attempts to focus on the chronological changes and transitions of metaphorical expressions within a single speech, in order to explain how a speaker tries to control and maintain the mental distance between him/herself and the audience, utilizing those metaphorical expressions. In this paper, the hypothetical mental distance concept is developed, and demonstrated in two speeches which are analyzed on the same platform. In conclusion, this paper states that focusing on the chronological changes of metaphorical expressions within a single speech delivers important insights into correlations between the mental distance flows found in different conceptual metaphor domains.

Keywords: Conceptual Metaphor, Business Speech, Mental Distance, Chronological Perspective

I. Introduction—Roles of Metaphors

The main aim of this paper is to illustrate the chronological variation of 'Mental Distance' throughout a business speech, and to analyze the correlations between the major conceptual metaphors on which those metaphorical expressions in speeches are grounded. First, a fundamental understanding of the roles of metaphors will be explained.

Roles of metaphors in figurative language have been widely researched. Conceptual Metaphor Theory, proposed by Lakoff and Johnson (1980), presents a fundamental understanding of the roles of metaphors in our everyday discourse and perceptions of the entities that surround us. In the pioneering book, *Metaphors We Live By,* Lakoff and Johnson (1980) claimed, "The essence of metaphor is understanding one kind of thing in terms of another" (p. 5). A mapping, found between a source domain and a target domain, is static, and it projects an intended way of understanding a certain thing in the target domain, in terms of another thing mentioned in the source domain. Time, for example, is invisible and its value in life varies according to different cultures. The conceptual metaphor, TIME IS MONEY[1)], adds elements to the

1) In this article, in order to distinguish the conceptual metaphor and its linguistic metaphorical expression, metaphoric concepts are represented graphically by SMALL CAPITALS.

time domain, and it creates an appropriate understanding of time (Lakoff & Johnson, 2003: p. 253), promoting a specific value even for an invisible thing. Although this mapping is a static process, a metaphorical expression in the source domain plays an important part in creating a new understanding in a target domain. This is thought to be a creative function of the source domain, and the application of this function facilitates communication between a sender and a receiver, or a speaker and the audience in public speaking.

As mentioned, a specific sense of value can be created through conceptual metaphors and their linguistic expressions. For example, the conceptual metaphor, TIME IS MONEY, imposes a clear implication of value on time. On the other hand, through manipulating the metaphorical expressions in the source domain, specific literal meanings can often be made euphemistic. Cacciari (1998: p. 142) argues that this function may pose a risk as the metaphorical expression can become too ambiguous to be understood. Nevertheless, in many cases, this intended-ambiguity ought to be considered a necessary by-product of the metaphor's suggestiveness (Black, 1979: p. 30). Defining the value of an entity, as well as regulating the clarity of an argument, is also considered a fundamental creative function of the source domain and of the conceptual metaphors. This notion parallels the claim by Charteris-Black (2005: p. 13), who says, "Metaphor influences our beliefs, attitudes and values because it uses language to activate unconscious emotional associations and it influences the value that we place on ideas and beliefs on a scale of goodness and badness." Conceptual metaphors yield the proper metaphorical expressions, which set the listeners' understanding on the right track, in the way which the speaker intends.

II. Chronological Perspective in Metaphor Research

2.1 Background

There have been a large number of literatures which investigate the roles of metaphors from different perspectives. For example, Charteris-Black (2004), Deignan (1999, 2005, 2008a, 2008b), Stefanowitsch & Gries (2006) and Semino (2008) adopted the corpus-based metaphor analysis. McCaskey (1979), Clancy (1989), Boers (1997), Koller (2004, 2006, 2008, 2009), Zaltman & Zaltman (2008) and White & Herrera (2009) have focused on the roles of metaphors in business discourse[2]. In addition, other literatures, which suggest the efficient application of metaphorical expressions in business communication, have also been published, such as Martin et al. (1963), VanOosting (1985), Filson (1991, 1994) and Miller (2004).

Most of these literatures, however, have focused on the tendency and characteristics of individual conceptual metaphors and their metaphorical expressions. As for the metaphor application research for business speeches, there is little if any research, which sets a specific focus on the chronological variations of those metaphorical expressions throughout a single, continuous discourse. Take Semino (2008: pp. 199–207) for example. Semino summarized that there are three main types of corpus-based studies of metaphor[3], but this chronological perspective

2) Bargiela-Chiappini & Harris (1997), Bargiela-Chiappini (2007) and Bargiela-Chiappini et al. (2007) also discuss business discourse, but they do not especially focus on metaphors.

3) They are: "Corpora and general metaphorical patterns," "Corpora and genre-specific metaphorical patterns," and "Corpora and the cross-linguistic study of metaphor."

is not mentioned. Corpus-based approaches and critical discourse analysis are, needless to say, important methods for analyzing metaphors in business discourse. However, a speech is, in most cases, a complete set of consecutive layers of metaphorical expressions, governed by the conceptual metaphors. It is necessary to observe the flow of the metaphorical variations, in order to fully understand the chronological changes of speaker’s intensions that attempt to manipulate the audience’s understandings by utilizing metaphors.

2.2 Chronological Approach and its Potential for Expansion

Why is chronological analysis so important? First, when conducting a critical metaphor analysis of a speech, we should pay attention not only to the individual metaphors, but also to the interrelationships between different metaphorical expressions, period to period. This is because metaphors are “inter-related and interact” between themselves (Goatly, 2007: pp. 12-13). Metaphoric elements elaborate, extend or exemplify each other (Kyratzis, 1997), and different clusters of metaphors intersect (Boers, 1997). Metaphorical expressions are not standalone players in a discourse. In addition, Koller (2008: p. 111) also states, “very frequent [metaphoric] expressions . . . can simply echo each other by recurring throughout a text.”

It would appear that a quick and easy way to attempt a chronological approach in metaphor research is to utilize a feature of dispersion-plots provided by concordance applications, such as WordSmith Tools. It seems like an efficient method, but in fact, it simply pinpoints the locations of individual metaphorical expressions. We can not reveal any correlations or interrelations between them in such a simplistic allotment chart in the dispersion plot.

This explains why Koller (2008) employed another visual display system, called ‘VisDis 2.0’ created by Cameron & Stelma (2004). Koller attempted to analyze the correlations of metaphors in a business context by utilizing Visual Display. It helps us to see the locations of metaphorical expressions divided by genres (See Fig. 2-2-1).

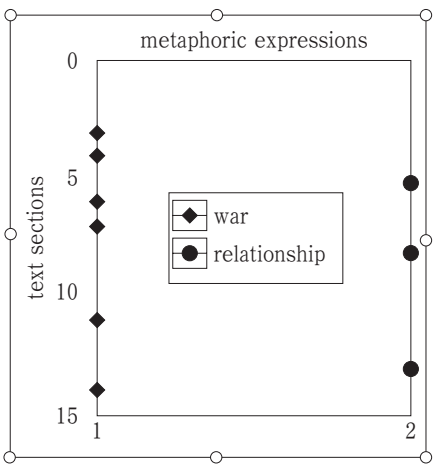


Fig. 2-2-1: Sample Visual Display output: from Koller (2008: p. 111)

From this chronological perspective, Koller (2008) hypothesizes as follows:

> Metaphoric expressions in the opening stretches of an article are seen as having a defining role by setting the agenda in terms of topic conceptualisation. When clustering in mid-text, however, metaphoric expressions are theorised to serve an argumentative purpose by elaborating on the agenda. Finally, metaphoric clustering towards the end of an article can be considered to function as a persuasive device by "driving the point home".
>
> (Koller, 2008: p. 111)

This is an interesting argument. However, one question still remains. How can we confirm the hypothesis, which is based upon simply observing the independent dots on the lines illustrated by VisDis 2.0?

To answer this question, we need a more precise qualitative and quantitative chronological analysis. Coincidentally, a chronological approach, attempted by Shimizu (2009c), supports Koller's (2008) hypothesis. In the study, a chronological qualitative analysis of two speeches, presented by two business leaders in the automobile industry, Lee Iacocca (1988—CSPK) and Carlos Ghosn (1999—NRP), was conducted. The content of both speeches was the announcement of the closing of plants to the public and the plant employees. Through the analysis of the differences and similarities of the conceptual metaphors, a visualized image of the roles of the conceptual metaphors was developed (See Fig. 2-2-2).

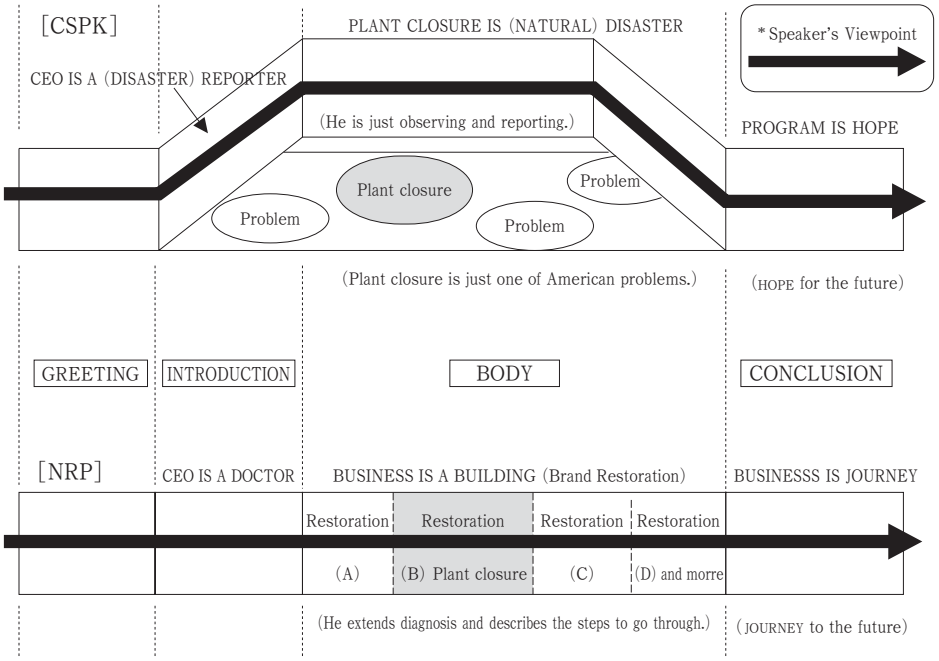


Fig. 2-2-2: Chronological variations of metaphorical viewpoint (Shimizu, 2009c: p. 27)

Shimizu's (2009c) conclusion parallels the previously introduced Koller's (2008) hypothesis as shown below.

> To summarize, effective utilization of metaphorical expressions, in the beginning of a business speech, will help the audience to visualize a clear image of the conceptual understanding. This is because "metaphorical concepts can be extended beyond the range of ordinary literal way of thinking and talking into the range of what is called figurative, poetic, colorful, or fanciful thought and language" (Lakoff and Johnson, 1980: p. 13). As Moore (1982) also suggests, a metaphor is "an evocative exploitation of given meanings" (p. 12). This requires further research, however. As far as these two business speeches are concerned, the conceptual metaphors and the metaphorical expressions, found in the introductions of the speeches, play a role of a determiner for the whole conceptual image of the body. (Shimizu, 2009c: pp. 27-28)

These studies demonstrate the potential of the chronological approach for metaphor research in business discourse.

Further study is required here to establish the technical research platform for the chronological approach. We already have a computerized concordancer, to draw a precise dispersion plot of metaphorical expressions. We already have a means for conducting chronological metaphor research in business discourse. What is necessary now is a clear methodology to put these ideas altogether. The chronological 'Mental Distance' analysis method, using the computer application 'T-Sope 1.0,' will be established and applied in this paper.

III. 'Mental Distance' Concept

This paper proposes the original 'Mental Distance' concept. It is utilized to analyze the chronological variations of metaphor frequency within a singe speech. The mental distance concept is based on the following hypothesis.

3.1 Hypothesis

We, deliberately or not, try to manipulate the audience's understanding by utilizing linguistic metaphorical expressions in speeches in order to maintain and adjust a sense of 'distance' between the speaker and the audience. This 'distance' could be regarded as the mental distance that lies between a speaker and the audience at a particular point of metaphorical expression.

Mental distance indicates the level of occurrence frequency of the metaphorical expressions. By quantifying the frequency of the metaphorical expressions found in certain periods of time in a single speech, the chronological variation of the mental distance can be visualized with a line graph. Several groups of the major conceptual metaphors, which govern most of the metaphorical expressions in the speech, hold certain correlation patterns between themselves, as suggested by the flows of the mental distance in a graph. This graphical output displays the patterns of the mental distance variations in a chronological perspective. A simplified sample image of the chronological mental distance variation is as illustrated in Figure 3-1-1.

As can be seen from the figure 3-1-1, mental distance can also be described equally as the distance from the baseline (timeline) and a certain point of metaphor as seen in the hypothetical 'elevation model structure'[4] (Shimizu, 2009a: pp. 147-148). It depicts the chronological variations of the mental distance flow within a single speech, on a line graph. This paper will

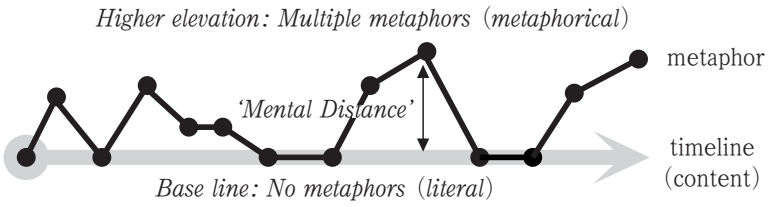


Fig. 3-1-1: Hypothetical elevation model structure (Prototype)

attempt to demonstrate the 'elevation model structure,' that visually analyzes the chronological variations of the mental distance within a single speech.

IV. Chronological Mental Distance Analysis

4.1 Method

In order to visualize the variation of mental distance within a business speech, it is necessary to pinpoint the location and frequency of metaphorical expressions, and quantify the data for analysis. The metaphorical expressions are manually checked throughout the manuscript, and are classified into six major 'conceptual metaphor groups' that govern most of the linguistic metaphorical expressions in the speech. The conceptual metaphor group (CMG) is a set of several conceptual metaphors that belong to a similar category (See Fig. 4-1-1).

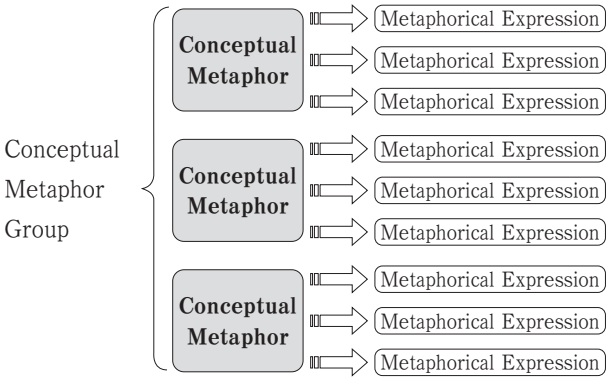


Fig. 4-1-1: Conceptual metaphor group (CMG)

For example, WAR, RACE, and DEBATE conceptual metaphors should be categorized in one conceptual metaphor group, named 'Competitive CMG.'

The concordance program 'WordSmith Tools (version 5.0)' by Lexical Analysis Software Ltd.[5] and the original Excel macro-program 'T-Scope (version 1.0)' by Shimizu (2009b) will

4) The straight horizontal line, stretched from left to right, shows the timeline and the content of a speech. Another line, resembling a line in a graph, moving up and down along the horizontal line, symbolizes the variation and the flow of the elevation level, which indicates the 'Mental Distance.' When the expressions are literal, the elevation remains at zero. When the expressions are metaphorical, the elevation increases, away from the base line (Shimizu, 2009a: p. 147).

be employed to analyze the mental distance. WordSmith Tools will help conduct the corpus-based analysis for the conceptual metaphor groups. T-Scope will convert the numerical raw data into usable sets of information, which isolates the numbers of metaphorical expressions captured in each 'scope.'[6)]

It is an important fundamental belief in this research that each numerical value in each scope will represent the degree, at a certain location of the scope, the speaker tries to maintain a certain level of distance between the speaker and the audience. It is expected that the variation of these numerical values throughout the speech will graphically demonstrate the transition of the speaker's mental distance. This paper will apply the mental distance concept to investigate the chronological variation of each conceptual metaphor group. Then, a comparative analysis will be conducted, using several conceptual metaphor groups in a single speech. This experimental research follows each of these steps, explained below.

4.2 Selection of Sample Speeches

The following is the sample business speeches, presented by two CEOs of different major beverage companies in the United States. They are both uncut manuscripts quoted from the September 2009 edition of *Vital Speeches of the Day*.

[Sample Speech: A]
Theme: Leading to the Future
Speaker: Indra K. Nooyi, Chairman and CEO, PepsiCo
Place: The Economic Club of Washington, Washington, D.C.
Date: May 12, 2009
Length: 5,785 words (343 sentences: 16.9 words average per sentence)
Source: *Vital Speeches of the Day*, September 2009, pp. 404-410

[Sample Speech: B]
Theme: America and Turkey
Speaker: Muhtar Kent, Chairman and CEO, The Coca-Cola Company
Place: The 28th Annual Conference on U. S.-Turkish Relations,
Fort Washington, Maryland
Date: June 1, 2009
Length: 3,155 words (181 sentences: 17.4 words average per sentence)
Source: *Vital Speeches of the Day*, September 2009, pp. 416-420

4.3 Categorization of Major Conceptual Metaphors

According to the preceding studies on metaphor research in business communication, these major conceptual metaphors in business communication have been discussed:
—JOURNEY, GAME, WAR, MACHINE, ORGANISM and SOCIETY (Clancy, 1989: pp. 24-34).

5) Details available at: http://www.lexically.net/wordsmith/index.html
6) It should be noted that the meaning of the term 'scope' is thoroughly different from that of Kövecses (2000: pp. 80-81).

－HEALTH, FITNESS, RACING, FIGHTING, and WARFARE in free market rhetoric (Boers, 1997: pp. 24-34).
－WAR, SPORTS, GAMES, ROMANCE for marketing and sales, and FIGHTING, MATING, FEEDING, DANCING for mergers & acquisitions (Koller, 2004: pp. 43-63).
－WAR and RELATIONSHIP in marketing (Koller, 2008).

Based on these studies, the following six conceptual metaphor groups are tentatively fixed and presented for this experimental research:

(1) Competition-related conceptual metaphor group (CG), such as: GAME, WAR, WARFARE, SPORTS, DEBATE.
(2) Relation-related conceptual metaphor group (RG), such as: ROMANCE, MATING, RELATIONSHIP.
(3) Structure-related conceptual metaphor group (SG), such as: ORGANISM, SOCIETY, BUILDING, FACTORY, PLANT, CONTAINER, PRODUCTS, SUBSTANCE.
(4) Human-related conceptual metaphor group (HG) such as: HEALTH, FEEDING, FOOD, BODY, FEELING.
(5) Experience-related conceptual metaphor group (XG) such as: JOURNEY, ADVENTURE, HARDSHIP, ARTISTIC ACTIVITY.
(6) Moving-object-related conceptual metaphor group (MG) such as: CAR, SHIP, HORSE, ENGINE, PHYSICAL FORCE.

This pilot study adopts these six conceptual metaphor groups; CG, RG, SG, HG, XG and MG. Most metaphorical expressions found in the sample speeches will manually be categorized in one of these groups for the analysis.

4.4 Extraction of Metaphorical Expressions: Based on Conceptual Metaphor Groups

As most researchers of metaphor have already realized and several of them, like Low (1999), Deignan (1999, 2008a) and Koller (2008), have pointed out, what complicates the identification of metaphorical expressions in a corpus is "the lack of agreed criteria for metaphor identification" (Pragglejaz Group, 2007: p. 2). The issue, especially with corpus-based metaphor studies, is that the metaphorical expressions are pre-set, based on the researcher's intuition or psycholinguistic experiments (Deignan, 2008a: p. 151). It is pre-determined what kind of metaphorically-used words or phrases will probably be targeted in the corpus analysis. This fact, of course, seems unavoidable when completing an analysis of a large corpus with a click on a computer-assisted concordancer, such as WordSmith Tools or AntConc (Anthony, 2007). However, it is no doubt far more ideal, if possible, to check the metaphorical expressions manually first, so as to guarantee that no occurrence of any metaphorical expressions is left unchecked.

Therefore, this study will first start extracting metaphorical expressions one by one on fully hand-annotating basis. Furthermore, aiming to make this research more logical and objective, this paper will attempt to follow, although not in full, the instructions shown by (1) MIP, Metaphor Identification Procedure proposed by the Pragglejaz Group (2007: p. 2), and (2) what Koller (2008, pp. 109-110) suggests as the identification criteria. While extracting the metaphorical expressions manually in the corpus, every one of them is securely tagged to

identify the conceptual metaphor group they belong to: <CG>, <RG>, <SG>, <HG>, <XG> and <MG>. These tags will work on a concordancer to obtain the precise location and frequency information.

4.5 Computer-Assisted Analysis by WordSmith Tools and T-Scope

A concordancer WordSmith Tools will: (1) precisely identify the locations of the metaphorical expressions, which belong to each conceptual metaphor groups, (2) visually display the dispersion plots of metaphorical expression emergence, divided in each conceptual metaphor group. After all the locations of the metaphorical expressions are identified, the precise word numbers, on which these expressions are located, will be transcribed onto an Excel worksheet for the T-Scope analysis.

'T-Scope' is an original Excel macro-program, which captures the number of metaphorical expressions found within a certain range of words. Users may input and adjust two parameters of 'scope & step' to meet the analysis needs (See Fig. 4-5-1).

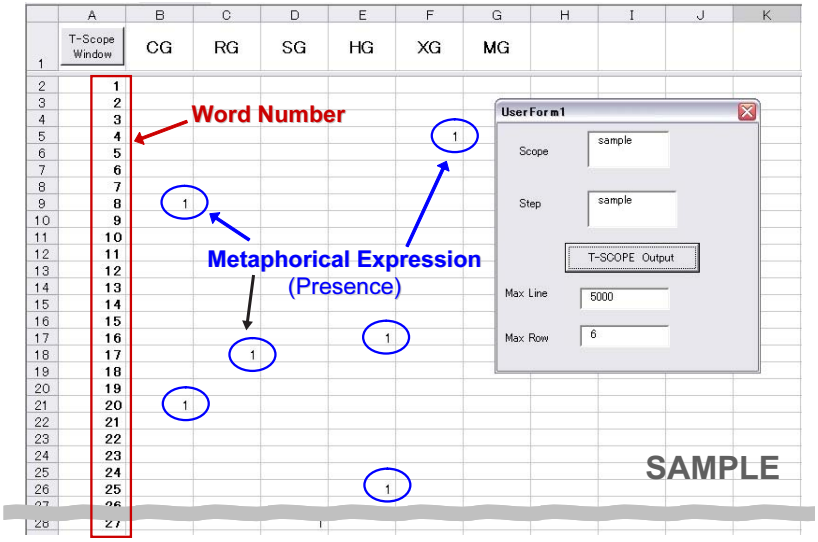


Fig. 4-5-1: Sample screenshot of 'T-Scope 1.0' with fictitious raw data (Shimizu, 2009b)

A 'scope' parameter is the number of words, which determines the range of scope, telling how many words a single scope may capture at once. A 'step' parameter determines the number of words the scope proceeds to the next location to work on another scope. The two parameters are described in Figure 4-5-2.

T-Scope will enable three things.

(1) It calculates the numbers of metaphorical expressions, and it quantifies the frequency of metaphorical expressions captured in each scope. This output will show applicable values to describe the mental distance, which the speaker adopts at a certain 'scope' period in a speech.

(2) It visualizes the chronological variation of mental distance flow, by modifying the 'scope

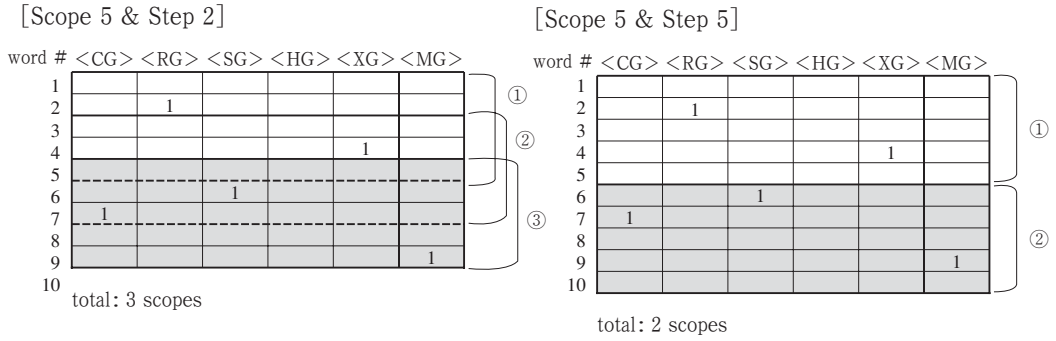


Fig. 4-5-2: Fundamental concept of 'scope & step' using T-Scope

& step' parameters for a clearer visual graph output.

(3) It analyzes the statistical correlations between these six conceptual metaphor groups, based on the sets of valid numerical values for correlation analysis, calculated by T-Scope.

For this research, these values of scope & step are set: 85 (scope) & 17 (step). The step value 17 is the rounded value of the average number of words per sentence in each speech; to be exact, it is 16.9 for sample speech A and 17.4 for sample speech B. As we shall see later, the scope value 85 came from several pre-tests to search for a best desirable outcome, and 85 is also equal to 5 times the number of the step value of 17.

V. Results

5.1 Overview

Having followed each step proposed in the previous section, the graphical and statistical outcomes of this experimental research are shown in the tables in this section. The study started by manually extracting metaphorical expressions in the sample speeches. It ascertained that there are 140 metaphorical expressions out of 5,785 words in sample speech A (frequency: 1 metaphorical expression per 41 words), and 128 out of 3,155 words in sample speech B (frequency: 1 per 24 words). Sample speech A has a larger total number of metaphorical expressions, but the overall metaphor frequency is higher in sample speech B.

Tables 5-1-1a & 5-1-1b are the lists of whole numerical vales calculated using T-Scope. The first right row of sums is the list of total numbers of metaphorical expressions captured in each scope. This is expected to refer to the total mental distance at a particular point of a speech.

Tables 5-1-2a & 5-1-2b (edited on the top of different contiguous pages) show the dispersion plots of each speech, created on the concordancer. Short vertical lines in the plots pinpoint the locations of metaphorical expressions. A "Dispersion" value, which ranges from 0 to 1, means the degree to which a set of values are uniformly spread. The approximate value, 0.9 to 1, suggests a very uniform spread of metaphorical expressions throughout a single speech.

Tables 5-1-3a & 5-1-3b, attached below each dispersion plot table, are compound line graphs, which demonstrate the chronological variations of mental distance in each speech. The

bolder gray line indicates the total degree of mental distance elevation that each speaker attempts to maintain at a particular point of a speech.

Tables 5-1-4a & 5-1-4b are correlation analysis charts. This statistical analysis was conducted on Microsoft Excel, using the numerical values calculated on T-Scope. The source values are shown in the tables 5-1-1a & 5-1-1b, and results are displayed within a range from −1.0 to+1.0. Plus values imply the positive interrelationship between the crossing two groups, and minus values indicate the negative correlation possibilities. This paper applies the 'type B,' indicated in each table with scope 85 & step 17. This is due to the following two reasons. First, the smaller the scope value is set, the sharper and more dispersed the line graph becomes. As one important objective of this research is to visualize the flow of the correlations between the conceptual metaphor groups in a chronological perspective, the visualized graph has to be easily read. In this regard, the scope value should not be too small, nor too large. Second, the scope value should be set within a range that will NOT drastically change the correlation patterns outcome from a statistical point of view. This explains the need for several pre-tests to elaborate the appropriate scope value, which creates 'an easily read graph' as well as 'an accurate correlation outcome.' The results of these pre-tests are shown in the tables 5-1-4a & 5-1-4b, which let us understand why the scope value was set to 85 in this paper.

(continued to next page)

Table 5-1-1a: Numerical value output using T-Scope—Sample speech A

Scope	CG	RG	SG	HG	XG	MG	Sum
1-85	0	0	0	0	0	0	0
18-102	0	0	0	0	0	0	0
35-119	0	0	0	0	0	0	0
52-136	0	0	0	0	1	0	1
69-153	0	0	0	0	1	0	1
86-170	0	0	0	0	1	0	1
103-187	0	0	0	0	1	0	1
120-204	0	0	0	0	1	0	1
137-221	0	0	0	0	0	0	0
154-238	0	1	0	0	0	0	1
171-255	0	2	0	0	0	0	2
188-272	0	3	0	1	0	0	4
205-289	0	3	0	1	2	0	6
222-306	1	3	0	1	2	0	7
239-323	1	2	0	2	3	0	8
256-340	1	1	0	2	3	2	9
273-357	1	0	0	1	3	2	7
290-374	1	0	0	1	1	2	5
307-391	0	0	0	1	1	3	5
324-408	0	0	0	0	0	3	3
341-425	0	0	0	0	0	1	1
358-442	0	0	0	0	0	1	1
375-459	0	0	0	0	0	2	2
392-476	0	0	0	0	0	1	1
409-493	0	0	0	0	1	1	2
426-510	0	0	0	0	1	1	2
443-527	0	0	0	0	1	1	2
460-544	0	0	0	0	1	0	1
477-561	0	0	0	0	1	0	1
494-578	0	0	0	0	0	0	0
511-595	0	0	0	0	0	1	1
528-612	0	0	0	0	0	1	1
545-629	0	0	0	0	1	1	2
562-646	1	0	0	0	2	1	4
579-663	1	0	0	0	4	1	6
596-680	1	0	0	0	4	0	5
613-697	1	0	0	0	6	0	7
630-714	1	0	0	0	5	0	6
647-731	0	0	0	0	5	0	5
664-748	0	0	1	0	3	0	4
681-765	0	0	3	0	3	0	6
698-782	0	0	3	0	1	0	4
715-799	0	0	3	0	1	0	4
732-816	0	0	3	0	0	0	3
749-833	0	0	2	0	0	0	2
766-850	0	0	0	0	0	0	0
783-867	1	0	0	0	0	0	1
800-884	2	0	0	0	0	0	2
817-901	2	0	0	0	0	0	2
834-918	2	0	0	0	0	0	2
851-935	2	0	0	0	0	0	2
868-952	1	0	0	0	0	0	1
885-969	0	0	0	0	0	0	0
902-986	0	0	0	0	0	0	0
919-1003	0	0	0	0	0	0	0
936-1020	0	0	1	0	0	0	1
953-1037	0	0	1	0	0	0	1
970-1054	0	0	1	0	0	0	1
987-1071	0	0	1	1	0	0	2
1004-1088	0	0	1	1	0	0	2
1021-1105	0	0	0	2	0	0	2
1038-1122	0	0	0	3	0	0	3
1055-1139	1	0	1	3	0	0	5
1072-1156	1	0	1	2	1	0	5
1089-1173	1	0	2	2	1	0	6
1106-1190	1	0	2	1	1	0	5
1123-1207	1	0	2	0	2	0	5
1140-1224	0	0	1	0	2	0	3
1157-1241	0	0	1	0	1	0	2
1174-1258	0	0	0	0	1	1	2
1191-1275	0	0	0	1	1	1	3
1208-1292	0	0	0	1	0	1	2
1225-1309	0	0	0	1	2	1	4
1242-1326	0	0	0	1	3	1	5
1259-1343	0	0	0	1	5	0	6
1276-1360	1	0	0	0	5	0	6
1293-1377	1	0	0	0	5	0	6
1310-1394	1	0	0	0	4	0	5
1327-1411	1	0	0	0	3	0	4
1344-1428	1	0	1	0	1	0	3
1361-1445	0	0	1	0	1	0	2
1378-1462	0	0	1	0	1	0	2
1395-1479	0	0	1	0	1	0	2
1412-1496	0	0	2	0	1	0	3
1429-1513	0	0	1	0	1	0	2
1446-1530	0	0	1	0	1	0	2
1463-1547	0	0	1	1	1	0	3
1480-1564	0	0	1	1	0	0	2
1497-1581	0	0	0	1	0	0	1
1514-1598	1	0	0	1	0	0	2
1531-1615	2	0	0	1	0	0	3
1548-1632	3	0	0	0	0	0	3
1565-1649	3	0	0	0	0	0	3
1582-1666	3	0	0	0	0	0	3
1599-1683	2	0	1	0	0	0	3
1616-1700	1	0	2	0	0	0	3
1633-1717	0	0	3	0	0	0	3
1650-1734	0	0	3	0	0	0	3
1667-1751	0	0	4	0	2	0	6
1684-1768	0	0	3	0	2	0	5
1701-1785	0	0	2	0	2	0	4
1718-1802	0	0	1	0	2	0	3
1735-1819	0	0	1	1	2	0	4
1752-1836	0	0	0	1	0	0	1
1769-1853	0	0	0	1	1	0	2
1786-1870	0	0	0	1	2	0	3
1803-1887	0	0	0	1	2	0	3
1820-1904	0	0	0	0	2	0	2
1837-1921	0	0	0	0	2	0	2
1854-1938	0	1	0	0	1	0	2
1871-1955	0	3	0	0	2	0	5
1888-1972	0	3	1	0	2	0	6
1905-1989	0	3	2	0	2	0	7
1922-2006	0	3	2	0	2	0	7

Scope	CG	RG	SG	HG	XG	MG	Sum
1939-2023	0	2	2	0	2	0	6
1956-2040	0	0	2	0	0	0	2
1973-2057	1	0	1	1	0	0	3
1990-2074	1	0	0	2	0	0	3
2007-2091	1	0	1	2	0	0	4
2024-2108	1	0	1	2	0	0	4
2041-2125	1	0	1	3	0	0	5
2058-2142	1	0	1	2	0	0	4
2075-2159	1	0	1	1	0	0	3
2092-2176	2	0	0	1	0	0	3
2109-2193	2	0	0	1	0	0	3
2126-2210	2	0	0	0	0	0	2
2143-2227	1	0	0	0	0	0	1
2160-2244	1	0	0	0	0	0	1
2177-2261	0	0	0	0	0	0	0
2194-2278	1	0	0	0	0	0	1
2211-2295	1	0	0	1	0	0	2
2228-2312	1	0	0	1	0	0	2
2245-2329	1	0	0	1	0	0	2
2262-2346	1	0	0	1	0	0	2
2279-2363	0	0	0	2	0	0	2
2296-2380	1	0	0	1	0	1	3
2313-2397	2	0	0	1	0	1	4
2330-2414	2	0	2	1	0	1	6
2347-2431	2	0	3	1	0	1	7
2364-2448	2	0	3	0	0	1	6
2381-2465	1	0	3	0	0	0	4
2398-2482	0	0	4	0	0	0	4
2415-2499	0	0	2	0	0	1	3
2432-2516	0	0	1	0	0	1	2
2449-2533	0	0	1	0	0	1	2
2466-2550	0	0	1	0	0	1	2
2483-2567	0	0	0	0	0	1	1
2500-2584	0	0	0	0	0	0	0
2517-2601	0	0	0	0	0	0	0
2534-2618	0	0	0	0	0	0	0
2551-2635	0	0	1	0	0	0	1
2568-2652	0	0	1	0	0	0	1
2585-2669	0	0	1	0	0	0	1
2602-2686	0	0	1	0	0	0	1
2619-2703	0	0	1	0	0	0	1
2636-2720	0	0	0	0	0	0	0
2653-2737	0	0	0	0	0	1	1
2670-2754	0	0	0	0	0	1	1
2687-2771	0	0	0	0	0	1	1
2704-2788	0	0	0	0	0	1	1
2721-2805	0	0	0	0	0	1	1
2738-2822	0	0	0	0	0	0	0
2755-2839	0	0	0	1	0	0	1
2772-2856	0	0	0	1	0	0	1
2789-2873	0	0	0	1	0	0	1
2806-2890	0	0	0	1	1	0	2
2823-2907	0	0	0	1	1	0	2
2840-2924	0	0	0	0	1	0	1
2857-2941	0	0	0	0	1	0	1
2874-2958	0	0	0	0	1	0	1
2891-2975	0	0	0	0	1	0	1
2908-2992	1	0	1	1	1	0	4
2925-3009	1	0	1	1	1	0	4
2942-3026	1	0	1	1	1	0	4
2959-3043	1	0	1	1	1	0	4
2976-3060	1	0	1	1	0	0	3
2993-3077	0	0	0	0	1	0	1
3010-3094	0	0	0	0	1	0	1
3027-3111	0	0	0	0	2	0	2
3044-3128	0	0	0	0	2	0	2
3061-3145	0	0	0	0	2	0	2
3078-3162	0	0	0	0	1	0	1
3095-3179	0	0	0	0	1	0	1
3112-3196	0	0	0	0	0	0	0
3129-3213	0	0	0	0	0	0	0
3146-3230	0	0	0	0	0	0	0
3163-3247	0	0	1	0	0	0	1
3180-3264	0	1	1	0	0	0	2
3197-3281	0	1	2	0	0	0	3
3214-3298	0	1	2	0	0	0	3
3231-3315	0	1	2	0	0	0	3
3248-3332	0	1	1	0	0	0	2
3265-3349	0	0	1	0	0	0	1
3282-3366	0	0	0	0	0	0	0
3299-3383	0	0	0	0	0	0	0
3316-3400	0	0	0	0	0	0	0
3333-3417	0	0	0	0	0	0	0
3350-3434	0	0	0	0	0	0	0
3367-3451	0	0	0	0	0	0	0
3384-3468	0	0	0	0	0	0	0
3401-3485	0	0	0	0	0	0	0
3418-3502	0	0	1	0	0	0	1
3435-3519	0	0	1	0	1	0	2
3452-3536	0	0	1	0	1	0	2
3469-3553	0	0	1	1	1	0	3
3486-3570	0	0	1	1	1	0	3
3503-3587	0	0	0	1	1	0	2
3520-3604	0	0	0	1	0	0	1
3537-3621	0	0	0	1	0	0	1
3554-3638	0	0	1	0	0	0	1
3571-3655	0	0	1	0	0	0	1
3588-3672	0	0	1	0	0	0	1
3605-3689	0	0	1	0	1	0	2
3622-3706	1	0	1	0	2	0	4
3639-3723	1	0	0	0	2	0	3
3656-3740	1	0	1	0	2	0	4
3673-3757	1	0	1	0	2	0	4
3690-3774	1	0	1	0	1	0	3
3707-3791	0	0	2	0	1	0	3
3724-3808	0	0	2	0	1	0	3
3741-3825	0	0	1	1	1	0	3
3758-3842	0	0	2	1	1	0	4
3775-3859	1	0	2	1	1	0	5
3792-3876	1	0	1	1	0	0	3
3809-3893	1	0	1	1	0	0	3
3826-3910	1	0	1	0	0	0	2
3843-3927	1	0	0	0	1	0	2
3860-3944	0	0	0	0	1	0	1

Scope	CG	RG	SG	HG	XG	MG	Sum
3877-3961	0	0	0	0	1	0	1
3894-3978	0	0	0	0	1	0	1
3911-3995	0	0	0	0	1	0	1
3928-4012	0	0	0	0	0	0	0
3945-4029	0	0	0	0	0	0	0
3962-4046	0	0	0	0	0	0	0
3979-4063	0	0	0	0	0	0	0
3996-4080	0	0	0	0	0	0	0
4013-4097	0	0	0	0	0	0	0
4030-4114	0	0	0	0	0	0	0
4047-4131	0	0	0	0	0	0	0
4064-4148	0	0	0	0	0	0	0
4081-4165	0	0	0	0	0	0	0
4098-4182	1	0	0	0	0	0	1
4115-4199	1	0	0	0	0	0	1
4132-4216	1	0	0	0	0	0	1
4149-4233	1	0	1	0	0	0	2
4166-4250	1	0	1	0	0	0	2
4183-4267	0	0	1	0	0	0	1
4200-4284	0	0	1	0	0	0	1
4217-4301	0	0	1	0	0	0	1
4234-4318	0	0	0	0	0	0	0
4251-4335	1	0	0	0	0	0	1
4268-4352	1	0	0	0	0	0	1
4285-4369	1	0	0	0	0	0	1
4302-4386	1	0	0	0	0	0	1
4319-4403	1	0	1	0	0	0	2
4336-4420	0	0	1	0	0	0	1
4353-4437	0	0	1	0	0	0	1
4370-4454	0	0	1	0	0	0	1
4387-4471	0	0	1	0	0	0	1
4404-4488	0	0	0	0	0	0	0
4421-4505	0	0	0	0	0	0	0
4438-4522	0	0	0	0	0	0	0
4455-4539	0	0	0	0	0	0	0
4472-4556	0	0	0	0	0	0	0
4489-4573	0	0	0	0	0	0	0
4506-4590	0	0	0	0	0	0	0
4523-4607	0	0	0	0	0	0	0
4540-4624	0	0	0	0	0	0	0
4557-4641	0	0	0	0	0	0	0
4574-4658	0	0	0	0	0	0	0
4591-4675	0	0	0	0	0	0	0
4608-4692	0	0	0	0	0	0	0
4625-4709	0	0	0	0	0	0	0
4642-4726	0	0	0	0	0	0	0
4659-4743	0	0	0	0	0	0	0
4676-4760	0	0	1	0	0	0	1
4693-4777	0	1	2	0	0	0	3
4710-4794	0	2	2	0	0	0	4
4727-4811	0	2	2	0	0	0	4
4744-4828	0	2	2	0	0	0	4
4761-4845	0	2	1	0	0	0	3
4778-4862	0	1	0	0	0	0	1
4795-4879	0	0	0	0	0	0	0
4812-4896	0	0	0	0	0	0	0
4829-4913	0	1	0	0	0	0	1
4846-4930	0	1	0	0	0	0	1
4863-4947	0	1	0	0	0	0	1
4880-4964	0	1	0	0	0	0	1
4897-4981	0	1	0	0	0	0	1
4914-4998	0	0	0	0	0	0	0
4931-5015	0	0	0	0	0	0	0
4948-5032	0	0	0	0	0	0	0
4965-5049	1	0	0	0	0	0	1
4982-5066	3	0	0	0	0	0	3
4999-5083	3	0	0	0	0	0	3
5016-5100	3	0	1	0	1	0	5
5033-5117	3	0	1	0	1	0	5
5050-5134	2	0	1	0	1	0	4
5067-5151	0	0	1	0	1	0	2
5084-5168	0	1	1	0	1	0	3
5101-5185	0	1	0	0	0	0	1
5118-5202	0	1	0	0	0	0	1
5135-5219	0	1	0	0	1	0	2
5152-5236	0	1	0	0	1	0	2
5169-5253	0	0	0	0	1	0	1
5186-5270	0	0	0	0	1	0	1
5203-5287	0	0	0	0	1	0	1
5220-5304	0	0	0	0	0	0	0
5237-5321	0	0	0	0	0	0	0
5254-5338	0	0	0	0	0	0	0
5271-5355	0	0	0	0	0	0	0
5288-5372	0	0	0	0	0	1	1
5305-5389	0	0	0	1	0	1	2
5322-5406	0	0	0	1	0	1	2
5339-5423	0	0	0	1	0	1	2
5356-5440	0	0	1	1	0	1	3
5373-5457	0	0	1	1	0	0	2
5390-5474	0	0	1	0	0	0	1
5407-5491	0	0	1	0	0	0	1
5424-5508	0	0	1	0	0	0	1
5441-5525	0	0	0	0	1	0	1
5458-5542	0	0	0	0	1	0	1
5475-5559	0	0	0	0	1	0	1
5492-5576	0	0	0	0	1	0	1
5509-5593	0	0	0	0	1	0	1
5526-5610	1	0	0	0	0	0	1
5543-5627	1	0	0	0	0	0	1
5560-5644	1	0	0	0	1	0	2
5577-5661	1	0	1	0	1	0	3
5594-5678	2	0	1	0	1	0	4
5611-5695	2	0	1	0	1	0	4
5628-5712	2	0	1	0	1	0	4
5645-5729	2	0	1	0	0	0	3
5662-5746	2	0	0	0	0	0	2
5679-5763	1	0	0	0	0	0	1
5696-5780	0	0	0	0	0	0	0
5713-5797	0	0	0	0	0	0	0
5730-5814	0	0	0	0	0	0	0
5747-5831	0	0	0	0	0	0	0
5764-5848	0	0	0	0	0	0	0
5781-5865	0	0	0	0	0	0	0

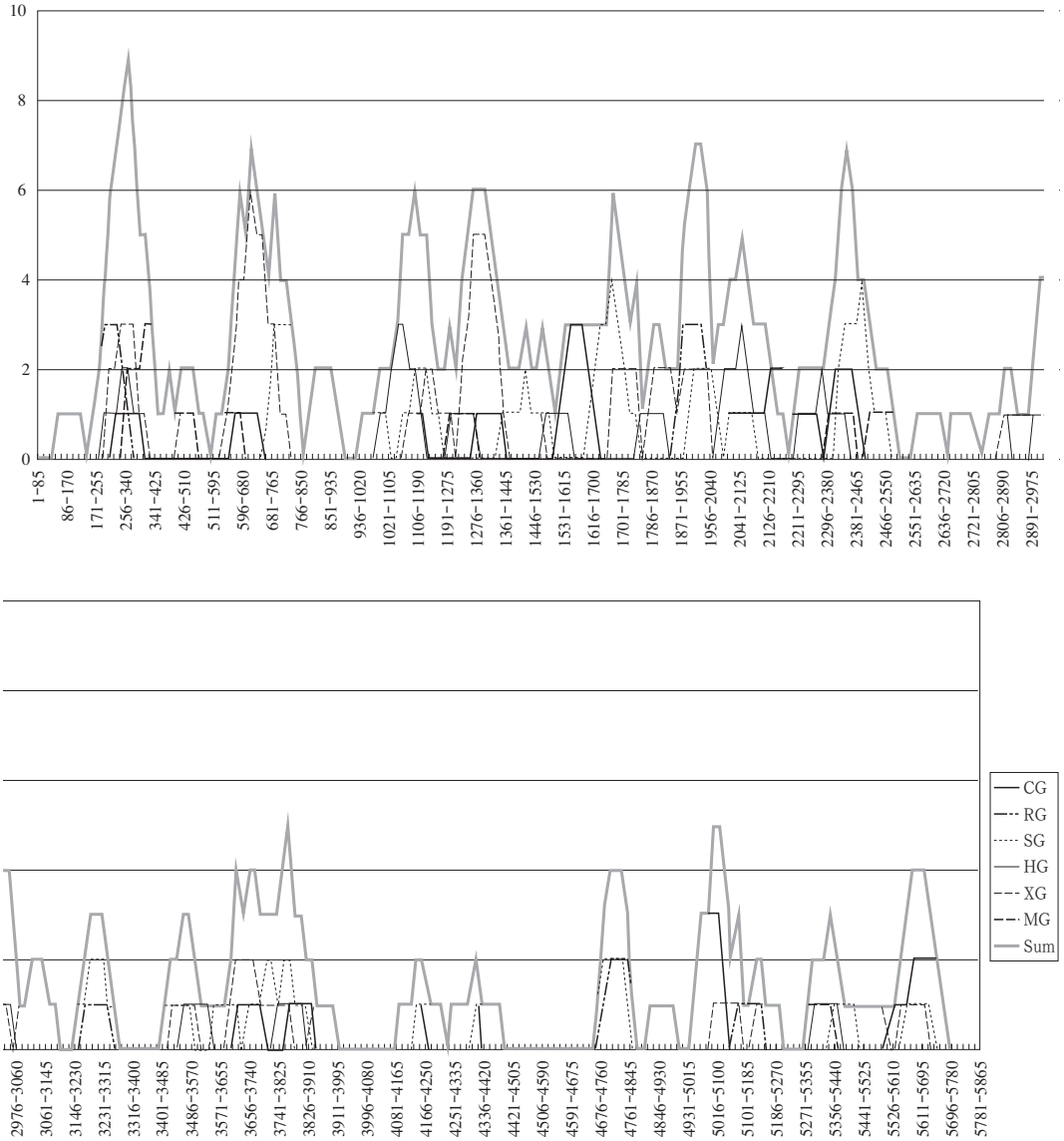
Table 5-1-1b: Numerical value output using T-Scope－Sample speech B

Scope	CG	RG	SG	HG	XG	MG	Sum
1-85	0	0	0	1	0	1	2
18-102	2	0	1	1	0	1	5
35-119	2	0	1	1	0	1	5
52-136	2	0	2	1	0	1	6
69-153	2	0	2	0	0	1	5
86-170	2	0	3	0	0	0	5
103-187	0	0	2	0	0	0	2
120-204	1	0	2	0	0	0	3
137-221	1	0	1	0	1	0	3
154-238	1	0	1	0	2	0	4
171-255	1	0	0	0	2	0	3
188-272	1	0	0	0	2	0	3
205-289	0	0	1	0	3	0	4
222-306	0	0	1	0	2	0	3
239-323	0	0	1	0	1	0	2
256-340	0	0	1	0	2	0	3
273-357	0	1	1	0	2	0	4
290-374	0	1	0	0	1	0	2
307-391	0	1	0	0	1	0	2
324-408	0	1	0	0	1	2	4
341-425	1	1	0	0	2	2	6
358-442	2	0	0	0	2	2	6
375-459	3	0	0	0	2	2	7
392-476	3	0	1	0	2	2	8
409-493	3	0	1	0	2	0	6
426-510	2	0	2	0	1	0	5
443-527	1	0	3	0	1	0	5
460-544	0	0	3	0	1	0	4
477-561	0	0	2	0	1	0	3
494-578	0	0	2	1	1	0	4
511-595	0	0	1	1	0	0	2
528-612	0	0	0	1	2	0	3
545-629	0	0	0	1	2	0	3
562-646	0	0	0	1	3	0	4
579-663	0	0	0	0	3	0	3
596-680	0	0	0	0	3	0	3
613-697	0	0	1	0	1	0	2
630-714	0	0	2	0	3	0	5
647-731	0	0	2	0	2	0	4
664-748	0	0	2	0	2	0	4
681-765	1	0	2	0	2	0	5
698-782	1	0	1	0	2	0	4
715-799	1	0	0	0	0	0	1
732-816	1	0	0	1	0	0	2
749-833	1	0	0	2	0	0	3
766-850	0	0	0	2	0	0	2
783-867	0	0	0	2	0	0	2
800-884	0	1	0	2	0	0	3
817-901	0	1	0	1	0	1	3
834-918	0	1	1	0	0	1	3
851-935	0	1	1	0	0	1	3
868-952	0	1	1	0	0	1	3
885-969	0	0	1	1	0	1	3
902-986	0	0	1	1	0	0	2
919-1003	0	0	0	1	0	1	2
936-1020	0	0	0	1	0	1	2
953-1037	0	0	0	1	0	1	2
970-1054	0	0	0	0	0	1	1
987-1071	1	0	1	0	1	1	4
1004-1088	1	0	1	0	1	0	3
1021-1105	1	1	1	0	2	1	6
1038-1122	3	1	1	0	2	1	8
1055-1139	3	1	2	0	2	2	10
1072-1156	2	1	1	0	1	2	7
1089-1173	2	1	2	0	1	2	8
1106-1190	2	0	3	1	0	1	7
1123-1207	0	0	3	1	0	1	5
1140-1224	0	0	2	1	1	0	4
1157-1241	0	0	2	1	1	0	4
1174-1258	0	0	1	1	1	0	3
1191-1275	0	0	1	1	3	0	5
1208-1292	0	0	1	1	3	0	5
1225-1309	0	0	1	1	2	1	5
1242-1326	0	0	2	1	2	2	7
1259-1343	0	0	2	1	2	2	7
1276-1360	0	0	1	0	0	2	3
1293-1377	0	0	1	0	1	2	4
1310-1394	0	0	2	0	1	1	4
1327-1411	0	0	1	0	1	0	2
1344-1428	0	0	2	0	1	0	3
1361-1445	0	0	3	0	1	0	4
1378-1462	0	0	3	0	0	0	3
1395-1479	1	0	2	0	0	0	3
1412-1496	1	0	2	0	0	0	3
1429-1513	1	0	1	0	0	0	2
1446-1530	1	0	0	0	0	0	1
1463-1547	1	0	0	0	0	0	1
1480-1564	0	0	0	0	0	0	0
1497-1581	0	0	0	0	0	0	0
1514-1598	0	0	0	0	0	0	0
1531-1615	0	0	0	0	0	0	0
1548-1632	0	0	0	0	0	0	0
1565-1649	1	0	1	0	0	0	2
1582-1666	1	0	1	0	0	0	2
1599-1683	1	0	1	0	0	0	2
1616-1700	1	0	1	0	0	0	2
1633-1717	1	1	1	0	0	0	3
1650-1734	0	1	0	1	0	0	2
1667-1751	0	1	0	1	1	0	3
1684-1768	0	1	0	1	1	0	3
1701-1785	0	1	0	1	1	0	3
1718-1802	0	0	1	1	3	0	5
1735-1819	0	0	1	0	5	0	6
1752-1836	0	0	1	0	4	0	5
1769-1853	0	1	2	0	4	0	7
1786-1870	0	1	2	0	6	0	9
1803-1887	0	1	2	0	4	0	7
1820-1904	1	1	2	0	2	0	6
1837-1921	1	1	2	0	2	0	6
1854-1938	2	0	1	0	2	0	5
1871-1955	2	0	1	0	0	0	3
1888-1972	2	0	0	0	0	0	2
1905-1989	1	0	0	0	0	0	1
1922-2006	1	0	0	0	0	0	1
1939-2023	0	0	0	0	0	0	0
1956-2040	0	0	0	0	0	0	0
1973-2057	0	1	0	0	0	0	1
1990-2074	0	1	0	0	0	0	1
2007-2091	0	1	0	0	0	0	1
2024-2108	0	1	0	0	0	1	2
2041-2125	0	1	0	0	0	1	2
2058-2142	1	0	0	0	0	1	2
2075-2159	1	0	0	0	0	1	2
2092-2176	1	0	0	0	1	1	3
2109-2193	1	0	0	0	1	0	2
2126-2210	1	0	0	0	1	0	2
2143-2227	0	0	0	0	1	0	1
2160-2244	0	1	0	0	1	0	2
2177-2261	0	1	0	0	0	1	2
2194-2278	0	1	0	0	0	1	2
2211-2295	0	1	0	0	0	1	2
2228-2312	0	1	0	0	0	1	2
2245-2329	0	0	0	0	0	1	1
2262-2346	0	0	1	0	0	1	2
2279-2363	0	0	2	0	1	1	4
2296-2380	0	0	2	0	1	1	4
2313-2397	0	0	2	0	1	1	4
2330-2414	0	0	2	0	1	1	4
2347-2431	0	0	1	0	1	0	2
2364-2448	0	1	0	0	0	0	1
2381-2465	0	2	0	0	0	0	2
2398-2482	0	2	0	0	0	0	2
2415-2499	0	2	0	0	0	0	2
2432-2516	0	2	0	0	1	0	3
2449-2533	0	1	1	0	1	1	4
2466-2550	1	0	1	0	1	1	4
2483-2567	1	0	1	0	1	1	4
2500-2584	1	0	2	0	1	1	5
2517-2601	2	0	2	1	0	1	6
2534-2618	2	0	2	1	0	0	5
2551-2635	1	0	2	1	0	0	4
2568-2652	2	0	2	1	1	0	6
2585-2669	2	0	1	1	1	0	5
2602-2686	1	0	2	0	1	0	4
2619-2703	2	0	1	1	1	0	5
2636-2720	2	1	2	1	1	0	7
2653-2737	1	1	2	1	0	1	6
2670-2754	1	1	2	2	0	1	7
2687-2771	2	2	1	3	0	1	9
2704-2788	2	2	1	3	0	1	9
2721-2805	2	1	0	3	0	1	7
2738-2822	2	1	0	3	0	0	6
2755-2839	2	1	0	2	0	0	5
2772-2856	1	0	0	1	0	0	2
2789-2873	0	0	0	0	0	0	0
2806-2890	0	0	0	0	0	0	0
2823-2907	0	0	0	0	0	0	0
2840-2924	0	0	0	0	0	0	0
2857-2941	0	0	0	0	0	0	0
2874-2958	0	0	0	0	0	0	0
2891-2975	0	0	0	0	2	0	2
2908-2992	0	0	0	1	2	0	3
2925-3009	0	0	0	1	2	0	3
2942-3026	0	0	0	1	2	1	4
2959-3043	0	0	0	1	2	1	4
2976-3060	0	0	0	1	1	1	3
2993-3077	1	0	0	0	1	1	3
3010-3094	2	0	0	0	1	1	4
3027-3111	3	1	0	0	1	0	5
3044-3128	3	1	0	0	1	0	5
3061-3145	3	2	0	0	0	0	5
3078-3162	2	2	0	0	0	0	4
3095-3179	1	2	0	0	0	0	3
3112-3196	0	1	0	0	0	0	1
3129-3213	0	1	0	0	0	0	1
3146-3230	0	0	0	0	0	0	0

Table 5-1-2a: Dispersion plots—Sample speech A

C.M.G.	Hits	per 1,000	Dispersion	Plot
<CG>	26	4.49	0.827	
<RG>	11	1.90	0.613	
<SG>	35	6.05	0.784	
<HG>	18	3.11	0.720	
<XG>	40	6.91	0.706	
<MG>	10	1.73	0.446	

Table 5-1-3a: 'Mental Distance' chronological elevation—Sample speech A

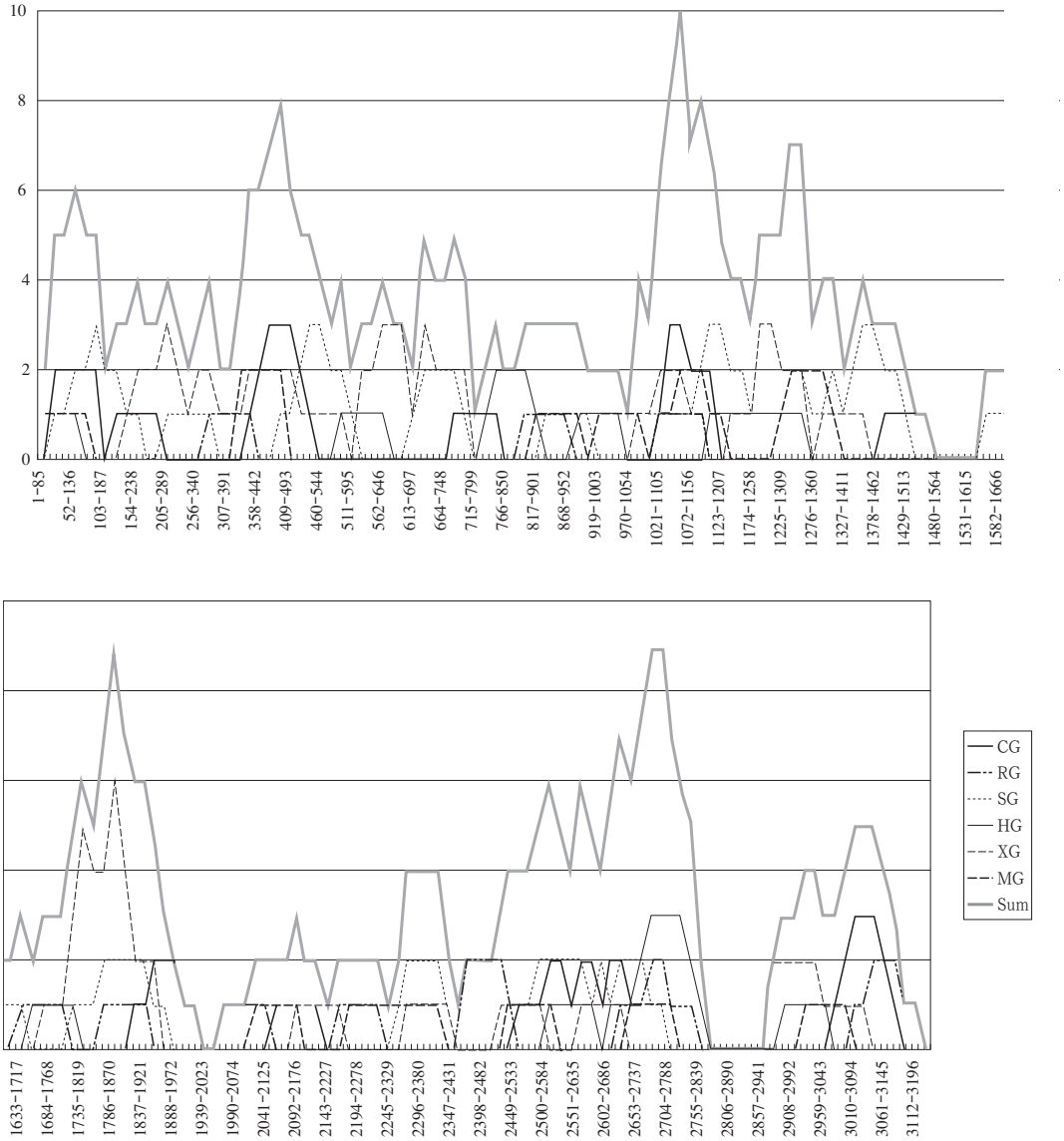


(Scope 85, Step 17)

Table 5-1-2b: Dispersion plots—Sample speech B

C.M.G.	Hits	per 1,000	Dispersion	Plot
<CG>	24	7.61	0.822	
<RG>	13	4.12	0.724	
<SG>	30	9.51	0.808	
<HG>	14	4.44	0.748	
<XG>	32	10.14	0.780	
<MG>	15	4.75	0.749	

Table 5-1-3b: 'Mental Distance' chronological elevation—Sample speech B



(Scope 85, Step 17)

Table 5-1-4a: Statistical correlation comparison－Sample speech A

Type A－Scope: 51 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	-0.08693	1					
SG	－0.0092	0.104117	1				
HG	0.130777	0.013675	-0.04363	1			
XG	0.048515	0.100234	0.01347	-0.01973	1		
MG	0.002409	-0.06611	-0.08121	0.122049	-0.05789	1	
Sum	0.44407	0.369912	0.463112	0.361864	0.598316	0.185569	1

Type B－Scope: 85 (Step: 17) Applied in this paper.

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	-0.11693	1					
SG	0.028309	0.105914	1				
HG	0.152244	0.004689	0.012044	1			
XG	0.045728	0.110549	0.023247	0.022231	1		
MG	-0.02056	-0.0758	-0.09994	0.12129	0.031805	1	
Sum	0.422395	0.349021	0.475768	0.410259	0.629704	0.21641	1

Type C－Scope: 119 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	-0.14092	1					
SG	0.07537	0.071312	1				
HG	0.191278	0.003743	0.059403	1			
XG	0.013369	0.126512	0.032561	0.037589	1		
MG	-0.03768	-0.03318	-0.09911	0.137882	0.088915	1	
Sum	0.408016	0.334771	0.479198	0.446087	0.645981	0.259101	1

Type D－Scope: 136 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	-0.14076	1					
SG	0.111868	0.045988	1				
HG	0.204555	0.022955	0.083613	1			
XG	-0.00301	0.126088	0.044686	0.048926	1		
MG	-0.03469	-0.01213	-0.10275	0.140082	0.102394	1	
Sum	0.409231	0.330615	0.484432	0.464519	0.649676	0.276317	1

Table 5-1-4b: Statistical correlation comparison－Sample speech B

Type A－Scope: 51 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	0.070977	1					
SG	0.038416	-0.14285	1				
HG	0.076719	0.077164	－0.0375	1			
XG	-0.04184	-0.10705	0.15602	-0.08921	1		
MG	0.106932	0.037967	0.068533	-0.02507	-0.04328	1	
Sum	0.509645	0.2408	0.502517	0.311279	0.501421	0.381859	1

Type B－Scope: 85 (Step: 17) Applied in this paper.

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	0.097771	1					
SG	0.131891	-0.20488	1				
HG	0.107929	0.099543	-0.03351	1			
XG	-0.07495	-0.11255	0.19938	-0.1318	1		
MG	0.177885	0.058872	0.074249	0.056536	-0.03686	1	
Sum	0.550275	0.216134	0.543811	0.31965	0.491273	0.41304	1

Type C－Scope: 119 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	0.155082	1					
SG	0.202531	-0.23185	1				
HG	0.148609	0.111477	0.033734	1			
XG	-0.11057	-0.11663	0.267328	-0.119	1		
MG	0.168033	0.07966	0.111539	0.072217	-0.02917	1	
Sum	0.547415	0.209226	0.60945	0.363643	0.509441	0.407222	1

Type D－Scope: 136 (Step: 17)

	CG	RG	SG	HG	XG	MG	Sum
CG	1						
RG	0.188013	1					
SG	0.21046	-0.24442	1				
HG	0.170762	0.120756	0.083225	1			
XG	-0.10997	-0.11837	0.287424	-0.11692	1		
MG	0.162791	0.106215	0.145084	0.061374	-0.03065	1	
Sum	0.546925	0.212231	0.634507	0.383494	0.516655	0.407709	1

VI. Discussion

This experimental research of mental distance bears four findings:

6.1 Contrast of Quantitative and Chronological Dominance of Conceptual Metaphors

One of the most important findings in this research is the contrast that lies between the quantitative and chronological analysis of metaphors. As we may learn from the tables 5-1-2a & 5-1-2b, the highest quantitative frequency is occupied by the XG (Experience-related) conceptual metaphor group, as seen in some JOURNEY metaphorical expressions; such as, "But we are at a crossroads" (sample speech A) and "... the road ahead is going to require shifts in our thinking" (sample speech B). However, when we take a closer look at these two tables 5-1-2a & 5-1-2b from a chronological point of view, we must realize the dominance of WAR conceptual metaphors, which are spread uniformly over these two speeches.

Indeed, the tables 5-1-2a & 5-1-2b indicate that the highest dispersion rates are both occupied by the CG (Competition-related) conceptual metaphor group. This group holds such WAR metaphorical expressions as, "Each person, each cohort has unique needs and wants" (sample speech A) and "Turkey not only survived the economic crisis of 2001" (sample speech B). Dispersion rate is important because, as Koller (2007: p. 111) also points out, frequent metaphorical expressions can echo throughout a text. The higher dispersion rate seems to make this echo much stronger, emphasizing the competitive aspect of business throughout the speech.

6.2 Flow-patterns of Mental Distance Elevation

The chronological mental distance chart on the tables 5-1-3a & 5-1-3b enables us to visualize (1) how much mental distance a speaker intends to maintain at a particular period of speech, and (2) how it flows and varies throughout a single speech.

In sample speech A (Table 5-1-3a), we may notice the clear difference of the average mental distance flow between the first half of the speech and the rest. The mental distance flow in the first half consists of consecutive metaphorical elements, but not much significance is found in the second half. This implies the speaker's intension to grab the audience's attention from the beginning to the middle. The speaker remains relatively literal later in the speech. On the other hand, in sample speech B (Table 5-1-3b), there are seen four major summits of mental distance at the scopes: (a) 409-493, (b) 1072-1156, (c) 1786-1870 and (d) 2704-2788. It is inspiring to observe that after the first peak, the other three summits (b), (c) and (d) occur in a similar length of intervals. This implies that, in this pattern of mental distance flow, the speaker attempts to catch and manipulate the audience's attention by creating several 'summits' of figurative approach in presenting the speech.

6.3 Independent Summit & Collaborative Summit

One thing we need to notice in the graphical mental distance flow is that there are different occurrence patterns of mental distance summits: an independent summit and a collaborative summit. An independent summit consists of metaphorical expressions that belong to only one or

two, or rarely three, conceptual metaphor group(s). In contrast, a collaborative summit occurs with multiple metaphorical expressions at once, which belong to three or more conceptual metaphor groups.

We can see the examples of independent summits at the scopes 596-680 (Table 5-1-3a), 1276-1360 (Table 5-1-3a) and 1735-1819 (Table 5-1-3b). As an independent summit is dominated by a single or two conceptual metaphor group(s), it becomes rather easy for a speaker to direct the audience's attention to a particular direction at that moment.

The examples of collaborative summit are found at the scopes 256-340 (Table 5-1-3a), 1072-1156 (Table 5-1-3b) and 2704-2788 (Table 5-1-3b). At a collaborative summit, the speaker seems to employ multiple genres of metaphorical expressions to obtain the audience's attention. Especially, this chronological graphical analysis clearly identifies that the collaborative summit at the scope 2704-2788 (Table 5-1-3b) is achieved by the complex collaboration of the preceding layers of metaphorical expressions[7], which belong to different conceptual metaphor groups.

6.4 Correlation Between Conceptual Metaphor Groups

What we can learn from the tables 5-1-4a & 5-1-4b is the level of correlation between six conceptual metaphor groups adopted in the analysis. This correlation analysis was conducted by the values calculated on T-Scope. This process may seem very simple, but it had not been possible to obtain the valid values of chronological correlation until T-Scope calculated and resorted the numerical values into an available and acceptable format for analysis on Microsoft Excel. The numbers marked with bold-lined squares are the highest positive value in each chart, implying that the crossing two categories have stronger correlations. The numbers in gray-shaded squares mean the highest negative value in each chart.

In these tables 5-1-4a (Type B) & 5-1-4b (Type B), the numbers on each bottom line, labeled 'Sum', are the correlation values that explain which conceptual metaphor group has a stronger interrelationship with the total sum. In other words, these values will explain which conceptual metaphor group has a dominant effect over the overall mental distance flow in the speech. In that regard, the flow of the XG (Experience-related) conceptual metaphor group has the strongest correlation with the whole mental distance flow in the speech (Table 5-1-4a, Type B).

This statistical correlation data helps us to understand what kind of metaphorical expressions co-occur on a similar emergence pattern. Statistically speaking, the highest values in each table, 0.152244 (Table 5-1-4a, Type B) and 0.19938 (Table 5-1-4b, Type B), are not strong enough to claim significant statistical correlation[8]. Nevertheless, when we exclusively draw the line graphs for the correlation between the specific two conceptual metaphor groups of; (1) positive highest (Fig. 6-4-1) and (2) negative highest (Fig. 6-4-2), the opposite interrelationships can be witnessed as demonstrated in the following figures.

7) This summit seems to be created by the collaborative layers of metaphorical expressions previously appeared in the scopes: from 2398-2482 to 2653-2737 (Table 5-1-3b).

8) The correlation value is basically expected to be 0.2 or higher to prove the official statistical interrelationship.

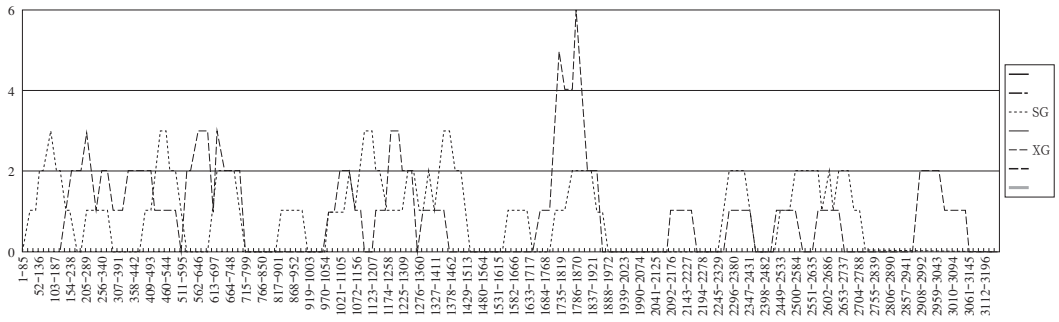


Fig. 6-4-1: Highest positive correlation between SG & XG (from Table 5-1-4b, Type B)

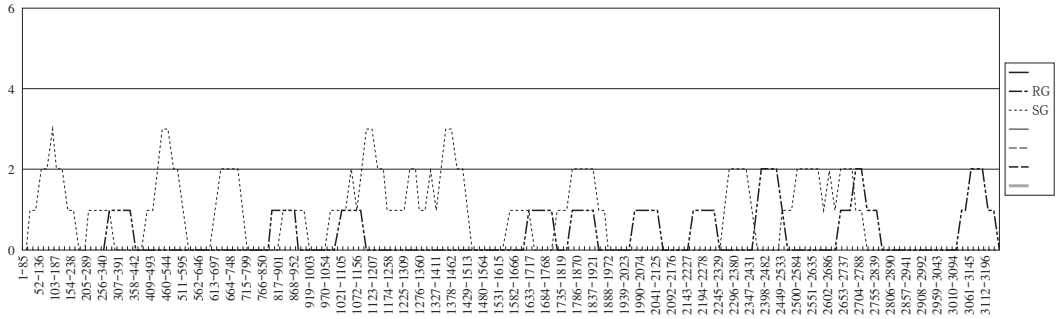


Fig. 6-4-2: Highest negative correlation between SG & RG (from Table 5-1-4b, Type B)

From these two figures, we notice that SG (Structure-related) & XG (Experience-related) are harmonized to work together, but SG (Structure-related) & RG (Relation-related) seem rather independent. These two graphs suggest the need for further research about the tendency of metaphor co-occurrence with a chronological perspective, through investigating this type of chronological correlations between conceptual metaphor groups. This is what 'T-Scope 1.0' makes possible as seen in the experimental data examined in this paper.

VII. Conclusion

This experimental research on mental distance enabled us to visualize the chronological flow of the collaborative work of metaphorical expressions in a business speech. As proposed in section 3.1, the speaker's mental distance was successfully visualized, aided by the computer calculation program 'T-Scope 1.0.' In tandem with the visualization process, this study also demonstrated the existence of correlations between these six conceptual metaphor groups in a chronological perspective. If we emphasize the "prime manifestation of the cognitive claim that language and thought are inextricably intertwined" (Lee, 2001: p. 7), the chronological variation of metaphorical expression frequency, which is named 'Mental Distance' here, can be a part of further research that will investigate how people try to express their implicit thoughts with explicit forms of metaphorical linguistic expressions.

In conclusion, it is hoped that this experimental research will become a starting point for the chronological metaphor analysis of business speeches. The mental distance flow, observed in

a visualized graph, demonstrates the variation of degrees, at which a certain set of metaphorical expressions work as an accelerator to manipulate the audience's attention and understanding. This explains the need for further research, which makes mental distance analysis a requisite measure for analyzing the metaphorical functions of business speeches in a chronological perspective.

VIII. Further Research

By conducting this experimental study, three points have been raised for further metaphor application research of business speeches. They are listed as follows:

8.1 Identification of Metaphorical Expressions

As we saw in section 4.4, the concrete, unified and standardized criteria for the identification of metaphorical expressions have not yet been fixed. This means, there is no critical degree, no way of defining at what extent a metaphorical expression becomes no longer metaphorical. In order to help standardize the criteria, our focus on the word origin seems to become much more important, because an awareness of the contrast, between an original literal meaning and an extended (in many cases, metaphorical) meaning, is necessary to judge if a certain expression is literal or metaphorical.

8.2 Categorizing Criteria of Conceptual Metaphor Groups

In this research, the idea of 'conceptual metaphor group' was adopted. This was necessary to make the interrelationships between the genres of conceptual metaphors clearer. However, one question still remains: How many conceptual metaphor groups should be created to fairly categorize all the metaphorical expressions in speeches? These six categories were reasonable as far as this experimental study was concerned. The criteria for fixing these conceptual metaphor groups, as well as of metaphorical expression identification, seems critical to establish a fair, stable outcome of metaphor application research, especially through a corpus-based approach.

8.3 Mental Distance Analysis in a 'Micro' Perspective

This paper visualized the chronological flow of metaphorical expressions from a 'macro' point of view, by precisely checking the numbers of metaphorical expressions in scopes, with a numerical value of 1 or 0 for each expression. It is unfortunate yet permissible that, in conducting this research, less attention was paid to each of the individual metaphorical expressions captured in the scopes. It is believed that mental distance can also be applied to calculating the individual linguistic mental distance; between being metaphorical and being literal. For example, if a CEO says :

(8-3-1a)	"Sorry, we can not go any further."	(metaphorical)
(8-3-1b)	"Sorry, we can not continue our business."	(literal)
(8-3-2a)	"Sorry, we are stuck for money."	(metaphorical)
(8-3-2b)	"Sorry, we are bankrupt."	(literal)

The question here is: How much do the linguistic mental distances differ; between; (8-3-1a) & (8-3-1b) and also (8-3-2a) & (8-3-2b)? There must be some different mental distance that lies between them. What makes it more complicated is that these (8-3-1b) and (8-3-2b) can even become metaphorical in a particular context. If we can measure this subtle individual mental distance from a 'micro' linguistic point of view, each value captured by T-Scope will become even more precise, like 1.4 or 2.8, rather than 1-or-0 type of calculation. In order to realize this, an interdisciplinary study could be attempted, such as with Reference Point Constructions by Langacker (2000) and with Relevance Theory by Sperber and Wilson (1995).

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