Application the ZMET method to explore meme cultural design elements

C.-H. Lo¹*, Y.-C. Ko², and S.-Q. Wang¹

¹Department of industrial design, Tunghai University, 407, Taichung City, Xitun District, Taiwan
²Department of Creative Product Design, Asia University, 500, Liufeng Road, Wufeng Dist., 413305 Taichung City, Taiwan

Abstract. With the prevalence of contemporary social media, online memes have become one of the popular cultural and communication media. This study uses metaphor extraction techniques to explore the design elements of "memes" to attract public use or viewing. Through the ZMRT interview method, Construct is integrated, and the relationship between Attribution (A), Consequences (C) and Values (V) is established by MEC to explore the mental models and thoughts of meme map users. The results of this study show that the design elements of memes need to stimulate the user's senses, express their situation or phenomenon in a concise and clear way, arouse users' recognition and initiate sharing. At the same time, understand the reasons for the prevalence of memes, people believe that meme diagrams can express inner feelings and thoughts, and achieve emotional

1 Introduction

The rise of social media has changed the interaction mode between people. People use social media to share, communicate and create. Memes are the product of the rapid spread of social media. After being copied and re-created by others on the Internet, they are continuously forwarded and shared, and quickly read and become hot topics in a short period of time.

More than 80% of people's communication does not rely on language and words, but on the thinking of images (Catchings-Castello, 2000). The forms of memes include pictures, catchphrases, videos, animations, etc. A meme is defined by Weber's Dictionary as a culture, as well as a kind of interesting thing or content that is widely disseminated through social media in the online world, transferring ideas, behaviors and styles from person to person.

2 Literature Review

*Corresponding author: chlo@thu.edu.tw
2.1 Definition and form of memes

The term meme originally comes from the concept proposed in the book "The Selfish Gene" published by British biologist Richard Dawkins in 1976. It follows the viewpoint of biological evolution genetics, and then describes the replication and evolution of organisms, which is also applicable to human society. Call this concept of popular culture replication and evolution a meme. The forms of memes are becoming more and more extensive and diverse. Creators can create them through secondary creation of text, images, or audio and video, and then express their ideas through the Internet (Shifman, 2014).

Also because of the nature of variation, transmission, and adaptability of memes (Yingjie, 2021), cultural thoughts are constantly copied and adapted, presenting the same concepts in different cultural ways, in addition to enabling creators to express ideas and share creations. In addition, meme culture has become a new global lingua franca. Kuznetsov (2017) and others sorted out four common meme forms, including verbal media memes, audial media memes, visual media memes, and hybrid media memes.

2.2 Mental Models

Norman (1983) proposed that mental models are people's concept of interpreting the operation of things, factors that occur, or human behavior, which can help people understand their own experience and feelings, and predict the results of actions or deal with emergencies.

Rouse & Morris (1986) also believed that the function of the mental model is that people can describe experience or form, explain and predict behavior in general terms, and it can be used as a memory mechanism to record "relationships" and "events" (Bao & Li, 2012).

From the perspective of cognitive psychology, Norman (1983) divided mental models into design model, user's mental model, and system image, explaining that the ideal relationship is to hope that the design model and the user's mental model are consistent. Because the mental model is mostly composed of incomplete "facts", people do not really understand the context of the process of their own mental models.

Because the mental model will change with the environment and life experience, it is necessary to measure and analyze the mind. There is no universally recognized best model to follow, and researchers can adjust it according to the characteristics of the research topic. Research on mental models focuses on exploring the factors that generate behavior.

Wozny (1992), Zaltman & Coulter (1993) all use the metaphor of visual images to construct the structure of consumers' mental models, and use in-depth interviews to explore the hidden meanings and ideas of constructs. Jonassen (1995) proposed that mental models can describe the context between concepts in an abstract way.

2.3 ZMET

ZMET was inspired by Professor Gerald Zaltman of Harvard Business School when he visited Nepal in 1990. Zaltman proposes a key principle: "What we see hides what we seek" (Catchings-Castello, 2000).

Cognitive scientists acknowledge that humans think in images, not in words (Stoller, 1989; Mehrabian, 1971). In order to further explore the deepest thoughts hidden in people's hearts, Zaltman proposed a research technique that combines non-literal language (pictures) and written language (in-depth interviews).
The ZMET theory is based on the fact that "the original thinking of human beings is in the form of images rather than words", and the pictures collected by the interviewees are used as a tool for spiritual exploration, visual metaphor. The in-depth interview adopts Kelly repertory grid technique and laddering technique to complement the deficiencies and effectively establish the concept of the interviewee.

The main concepts of ZMET theory are constructed on the premise of sensory metaphor, picture analysis and image thinking. The hypotheses put forward by Zaltman in the articles published in 1995, 1996 and 1997 can be summarized into seven hypotheses (Zaltman, 1996, 1997; Zaltman & Coulter, 1995).

Most communication is written language, thinking is produced through image form, metaphor is the basic unit of thinking, feeling and understanding behavior, sensory image is an important metaphor expression, mental model is the expression form of story, thinking. The deep structure is palpable, the fusion of reason and emotion.

2.4 RGT: ladder climbing and MEC

Repertroy Grid Technique (RGT) is derived from the personal construction theory of cognitive and clinical psychologist Kelly (1955). In clinical psychotherapy, Kelly's theory gradually developed the Kelly repertory grid technique (RGT) method, which became a data collection method for the eduction and collection of elements and constructs.

The ladder-climbing technique is used in in-depth interviews, a research tool that induces the relationship between concepts and concepts, and can effectively understand the hidden meaning and thoughts of the interviewees; in-depth interviews adopt direct inquiries, which can be conducted upward or downward to obtain Non-"yes" and "no" responses and cognitive constructs, such as: "Why is this important to you?". The interviewer continues to explore in a step-by-step, repeated manner until the interviewee fails to answer or repeats the same answer.

MEC in 1982, which is the product or service selected by the user, and end refers to the value states such as happiness, security, anger, and sense of accomplishment. Its purpose is to construct a model to explain the value of people's final expectations, and to understand the inner value and motivation behind consumers through the three-level connection of (Attribution), (Consequences), and (Values). This theory believes that when users choose products, Give meaning to goods or services and summarize them through the attributes of the product and the blueprint of expectations in mind. Olson & Reynolds (1983) further subdivided the three levels into six sub-levels:

- Attribution (A) is any feature that users feel about products or services, which can be divided into concrete attributes and abstract attributes.
- Consequences (C) are divided into functional and psychosocial results. Functional results refer to the specific or direct experience after using the product, such as eating ice to cool off the heat; psychological results refer to the psychological feelings after using the product, such as wearing fashionable clothes Keep up with trends.
- Values (V) are divided into instrumental value and final value. Instrumental value is usually used to assist in the pursuit of final value, while final value is an individual's preferred psychological state (Hu, 2015).

MEC (Attribution-Consequences-Values) provides a clear understanding of consumers' motivations and access to consumers' thoughts about products. These messages are contained in consumers' memories, so the ladder method is used to help recall memories.

3 Methods
This study takes meme design as the research object, and selects the interviewees based on the degree of involvement in the meme map. ZMET five-step interview combined with RGT and ladder-climbing method extraction guides the construction buried under the behavior and establishes attributes. The connection mode of Attribution - Consequences - Values, to understand the process of the interviewee's transformation of the attributes of the meme map itself into results and values, and then form a consensus map of the interviewee's mental model.

3.1 Research object and sampling method

Relevant studies have shown that ZMET personal in-depth interview technology only needs 4-5 interviewees to cover more than 90% of the ideas of a large sample of interviewees (Coulter et al, 2001), but in actual ZMET, 10-15 interviewees are generally interviewed to ensure that the missing constructs are far less than 10% (Christensen & Olson, 2002; Sugai, 2005; Zaltman, 1997).

This study uses an online questionnaire to select those who meet the conditions of this study and are willing to be interviewed. This research questionnaire sets 10 test items as "the frequency of browsing memes is high", "memes are important to me", "memes Because it is closely related to my life", "Memes can bring fun to my life", "Memes are interesting to me", "Memes have special meaning to me", "Memes are attractive to me", "Memes are valuable to me", "I am passionate about memes", "I don't think I need memes".

In this study, a total of 6 high-involvement meme users (4 females and 2 males) were interviewed. All of them were students in their occupations, aged 21-30, and used the Internet for an average of 5 hours a day.

3.2 Interview steps

The official interview, the interviewees were asked to find the 5 most frequently used Internet memes, and then conduct the five interview steps of ZMET based on the 5 pictures.

The interview pictures were provided by the interviewees themselves, so the interviewees can express their thoughts and feelings more accurately and judge the importance of the pictures to them. Guo & Chen (2012) believe that each step of ZMET has its own uniqueness, and each study can adjust itself according to the purpose of its own research theme.

Therefore, this study adjusted the ZMET interview to five steps;
Step 1: Narrate the story.
Step 2: The ladder-climbing method is to elicit the relationship between constructs.
Step 3: Classify the pictures to help the interviewees establish the main arguments and constructs.
Step 4: Use RGT to extract the behavioral constructs in the thinking.
Step 5: Respondents are asked to choose the most representative picture in each category. Subsequent extracting constructs cooperate with MEC to find out the interconnection between constructs.

After the individual construct extraction of the six interviewees is completed, they conduct induction.

According to Zaltman’s argument, the threshold value of common constructs is set to 1/3. This study
The co-construct and co-construct relationship of need to be mentioned by at least 2 interviewees, so as to establish a consensus basis and use MEC theory to draw a consensus map.

4 Results and Discussion

The interview dialogue mode uses the ladder-climbing method to confirm and derive the thoughts and feelings of the interviewees in sequence. It begins with "Why is this picture a commonly used picture" and asks the interviewee to describe the reason or the context of use. Adjectives and other words, further in-depth questioning of how or why, until the respondent began to say the same similar description over and over again. Finally, the keywords mentioned in the conversation are judged and classified according to the theoretical framework of the method-purpose chain. The words of attribute (A) include "personal experience", "roaring", "cats instead of people", and "dirty words"; the result (C) has "close to life", "not real but practical", and "resonance"; value (V) has constructs such as "interesting" and "funny".

The 6 interviewees discussed and reached a consensus. They classified and named the 30 meme maps, divided them into six groups, and named them as "sarcasm", "relaxing the atmosphere", "interesting", "disappointment", and "doubt" and "Close to Current Events" asked respondents to reorganize their feelings about the meme and trigger constructs. Let the 6 interviewees express the similarities and differences of the 6 categories respectively, and extract the constructs after integrating the descriptions. The interviewees discuss and select the most representative pictures.

Most respondents believe that memes with current events as the theme can be used for different purposes, such as irony, self-deprecating, and amusing, and ironic memes can also achieve a funny effect if they are accompanied by text.

This study obtained constructs from the interview content and compiled statistics. There are a total of 28 attributes (A), 39 results (C), and 29 values (V). From the original 96 constructs, 30 common constructs were extracted, including 10 (A), 13 (C), and 7 (V).

The common constructs are summarized in Table 1. (A) It can be seen that the elements attracted by the meme map mainly have the characteristics of interactive expression such as obvious actual actions and expressions, and the fact that the meme map brings out the real situation in the real world; (C) is due to attributes

The influence or collocation of elements makes the respondents get psychological feelings from the meme map; (V) is the characteristics and the value of the final result obtained by the respondents after using the meme map.

Based on the principle of a threshold of 1/4, the common constructs mentioned by the two interviewees are extracted. After analysis, among the 30 common constructs, 18 constructs are related to each other, and the remaining 12 common constructs

Constructs then become independent constructs. This research finally got 6 attributes, 11 results and 6 values. The analysis results show that the elements that attract users are the thematic "text", "expression" and "comparison", as well as the "response", "local language" and "action" that can experience and shorten the distance. Meme maps can bring users "irony", "association", "resonance", "personification", "violation", "comparison", "hell stem", "close to reality", "interesting", "appearance", and "No Violation" and other feelings, and convey the artistic conception that the meme intends to express. In the end, the value that users are willing to use or share with memes is that they can make people "smile" and "empathize", which can be used to "express thoughts" or make people "vigilant", and memes have a "moderate atmosphere".

The role of bringing people "fun". The Emotion Mental Map presents the overall thinking of the meme user's mind. The construct represents the user's most direct thoughts
on the meme map. The construct relationship includes the interrelationship of attributes, results and values.

Finally the 23 constructs are summarized into "expression of artistic conception" and "Emotional feelings" and other two aspects.

The final consensus map is drawn based on Attribution - Consequences - Values and two major dimensions, as shown in Fig. 1.

### Table 1. Construct

<table>
<thead>
<tr>
<th>Construct</th>
<th>NO.1</th>
<th>NO.4</th>
<th>NO.5</th>
<th>NO.6</th>
<th>NO.8</th>
<th>NO.11</th>
<th>total number of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 reflect the truth</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>A02 Homophonic stalk</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A03 expression</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>A04 Compare</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>A05 action</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>A06 Graphic and text</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>A07 joke</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>A08 word expression</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A09 literal sentence</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>A10 local language</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C01 interesting</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>C02 Personification</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>C03 resolve embarrassment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>C04 Contrast</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>C05 appearance</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>C06 Sense of disobedience</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>C07 no violation</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C08 close to reality</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>C09 second meaning</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C10 Satire</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>C11 Hellish gags</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>C12 Resonate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>C13 imagine</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>V01 ease the atmosphere</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>V02 express ideas</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>V03 interesting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>V04 knowing smile</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>V05 alert</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>V06 Empathy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>V07 joke</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

The elements of conveying artistic conception include 3 (A) "reflecting the truth", "local language", "action", 6 (C) "irony", "imagine", "resonance", "personification", "sense of violation", "Contrast", 3 (V) "Vigilance", "Express ideas", "Knowing smile".

Taking interview picture 4-1 as an example, interviewee No. 4 was interested in the "action (A)" element of the idol in this meme picture, and felt the disharmony of the picture because of the lively action of the idol, which is a symbol of reverence (C) "), as if the image and artistic conception of the god talking loudly at the concert site make people "smile knowingly (V) ". It can be seen from this that the design elements of meme maps can stimulate the senses of users, and convey situations or phenomena in a concentrated, concise and powerful way, arousing users' recognition and sharing.

The elements of emotional feelings include 3 (A) "word", "comparison", "expression", 5 (C) "close to reality", "hell stem", "funny", "appearance", "no Violation", 3 (V) "Relief atmosphere", "Interesting", "Empathy".

Respondent No. 11 felt helpless because of the high pressure, so he used the "expression (A)" of the cat in the meme picture instead of the direct statement, and because the
homonym between the expression and the text makes people feel "funny (C)" , so In addition to the purpose of expressing emotional feelings, it can also be used as a "relief atmosphere (V)". This shows that inner feelings and thoughts can be expressed through memes, and achieve the effect of smiling or expressing emotions.

Fig. 1. Emotion Mental Map

Note 1 : The number behind the construct item indicates the number of people who mentioned this construct.
Note 2: The arrow points to indicate correlation, and the numbers in brackets are the number of people and respondents who mentioned this correlation, for example, 2(1,6) means that 2 people mentioned it, they are interviewees No. 1 and No. 6 respectively.
Note 3: The gray mark is the correlation between the independent constructs mentioned by one person and the common constructs, as a reference value.

5 Conclusion

This research adopts metaphor extraction technology to obtain metaphors from images, transform metaphors into constructs, and then construct a consensus map of meme map users' mental models through construct extraction and analysis of construct relationships.

The results of this study show that the mental model context of meme map users contains 23 common constructs, which are 6 attributes (A), 11 results (C), and 6 values (V), which are further divided into "conveyance of artistic conception " and There are two aspects of "emotional feeling". The elements that attract users are thematic "text sentences", "expression" and "comparison", as well as "response facts", "Taiwanese" and "actions" that can shorten the sense of distance; meme maps can bring Give users "irony", imagine", "resonance", "personification", "violation", "contrast", "hell stem", "close to reality", "interesting", "appearance" and " No violation and other psychological feelings, and then convey the artistic conception that memes want to express; the value that users are willing to use or share with memes is that they can make people "smile" and "empathize", which can be used as " Express ideas" or make people “vigilant”, and meme maps have the effect of “relaxing the atmosphere” and bringing people “interesting” fun. Most users think that
meme maps with "current events" as the theme element can change to different use results or values, such as irony, hell, funny and so on.

Users think that "text", "expression" and "comparison" can set off the interest of the image. The design elements of meme maps need to be able to stimulate the senses of users, and convey situations or phenomena in a concise and clear way, arousing users' recognition and sharing.

Users believe that memes can be used to express their inner feelings and thoughts, and achieve the effect of smiling or expressing emotions.

It is hoped that in the future, more meme maps will be used to quickly attract consumers' attention and accelerate the speed of advertising dissemination.

Designers related to social software texture maps can also use this as a design reference direction to increase the uniqueness of creation and satisfy people's emotional communication. This study also confirmed that ZMET is a good research tool for the establishment of mental models.

6 Acknowledgement

The author is grateful to the Ministry of Science and Technology of the Republic of China for supporting this research under grant MOST MOST 111-2221-E-029-010-MY3 and MOST 111-2622-E-029-008.

References

1. C.-H. Huang, W.-L. Wu, C.-C. Chen, Applying the evaluation structure method to explore the factors of attractiveness of brand image of commercial district-taking Wan Hua Business District in Taipei City as An Example. CID 202 The 26th Academic Research Achievement Symposium of the Chinese Institute of Design (2021)
9. I. Mezinova, M. Balanova, O. Bodinova, E. Israilova, E. Nazarova, E. Do Creators of New Markets Meet SDGs? Analysis of Platform Companies. Sustainability (Switzerland), 14(2), 674 (2022)