The aspects of modern Korean architectural discourses observed by applying MEME theory

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ABSTRACT
The purpose of this study is to measure and observe memes in Korean modern architectural discourse. Here, a meme is understood as a cultural gene or in other words, a popular architectural concept or practice that is passed from one generation to the next by imitation. After extracting memes from the text of the leading architectural magazine in Korea titled SPACE magazine, we used network analysis to investigate them. The findings of this study were as follows. First, by researching 601 issues of SPACE magazine published between 1967 and 2018, the total number of memes extracted was 708. These memes were divided into 291 types of memes, which were then classified into 24 memeplexes (groups of memes with similar contents). Second, because of analyzing the influence of these memeplexes over time, we found that the “Tradition” memeplex had great influence in the past, while philosophy-related memeplexes such as “Sense of place,” “Phenomenology,” “Philosophy of Becoming,” and “Post-structuralism” have been influential. However, the “Modernism” memeplex has been the most durable, having the greatest influence on Korean architects from past to present.

1. Introduction
All living things survive by propagating their genes. Interestingly, the survival of human culture involves a similar process. For millennia, cultural products have been inherited and spread to the next generation. In 1976, Richard Dawkins, a famous British evolutionary biologist, defined these proliferating human cultural products as “memes” in his book The Selfish Gene. A meme is understood as a cultural gene or in other words, a popular cultural concept or practice that is passed from one generation to the next by imitation.

Since architecture is a cultural product, memes appear throughout the field. The works, writings, and styles of famous architects continue to influence future generations of architects, creating disciplinary discourses in the process. Moreover, the competition among architects has intensified recently due to the development of the media, globalization, and commercialization.

This study used meme theory to quantitatively measure and analyze memes that appear in modern Korean architectural discourses. Since memes have never been objectively measured and quantified in fields such as architecture, sociology, or psychology, this study will be rare study with consilience. However, by analyzing architectural discourses from the meme theory perspective, we will be able to grasp how memes are produced and dispersed through cultural discourses quantitatively and accurately.

2. Theoretical background
2.1. Gene and replicator
In 1976, Dawkins, a professor at Oxford University in the United Kingdom, wrote The Selfish Gene and said “genes have the nature of trying to replicate and propagate themselves, and living thing is nothing more than a machine that carries genes. Human beings are of course no different, and so every action they do is determined by the intention of spreading the genes.”

Evolution consists of three phenomena: heredity, variation, and selection (Griffiths et al. 1999).

Heredity is a phenomenon in which genetic information is copied by the cloning of DNA and the characteristics of a parent or striatal object are passed on to the next generations.

Variation comprises differences in the characteristics of parts of the body that are altered by errors in DNA replication during fertilization and breeding.

Selection is a phenomenon in which an individual with different traits is born through mutation and is more adaptable to the environment than other individuals are.

These three principles comprise the core of Charles Darwin’s theory of evolution through natural selection. It is a process reliant on the gene, which Dawkins referred to as a “replicator,” “an entity that creates its own copy through interaction with the outside world” (Jang 2015). He went on to suggest that there was another, easily observable replicator that could reveal the Darwinian process as well as the gene: human culture.
2.2. Meme as cultural replicator

Dawkins makes provocative claims in the latter part of *The Selfish Gene*. He insists that human culture evolves through a process similar to the one proposed by Darwin’s evolution theory and names the replicator that makes this process possible “meme.”

Indeed, if you look at human cultural products, you will see evidence of inheritance, variation, and selection. For example, in the music industry, songs that remain better in people’s brains beat other songs and spread to the public. Moreover, those songs transform when they are remade, copied, or sampled. Art, fashion, and cinema experience similar phenomena.

The word “meme” is borrowed from the Greek word *mimesis*, which means “replication.” The purpose of the meme and the gene as replicators is the same, but the cloning methods show the following differences:

1. The gene synthesizes proteins, and the meme makes actions.
2. The gene is stored as DNA in the cell nucleus, and the meme is stored in the brain in the form of language, image, and thought.
3. The gene is transmitted through reproduction, but the meme is transmitted through imitation.
4. Genes drive the evolution of biological systems through competition between genes. Memes drive the evolution of culture and thought through competition between memes.

Within the field of architecture, memes’ fierce competition arise. Therefore, this study seeks to find and analyze those memes in the architecture field.

2.3. Advantages of applying meme theory to architecture

The purpose of this study is to analyze the discourses of contemporary Korean architecture objectively and quantitatively. The existing method of discursive analysis is mainly text mining, which uses the frequency of keywords in the text to find out what topics or themes are mentioned frequently.

However, if you apply meme theory to this process, more information can be assessed. As previously stated, memes are entities that spread through imitation between people. Thus, memes have a sender (a person who sent the meme) and a receiver (a person who received the meme) (Figure 1). In other words, while the existing keyword analysis can only determine the content of the text, meme theory allows you to see how this content is disseminated.

Therefore, in this study, we expected to answer the following questions.

(Example)

Figure 1. Things that can be found out by meme theory.

1. Which foreign and Korean figures considerably influenced the field of contemporary architecture in Korea?
2. What architectural styles did Korean architects borrow from . . . (some architect)?
3. Who has influenced Korean architects the most since 2010?

However, there are not many studies in which meme theory has been used in the field of architecture. A small number of studies have used meme theory to explain phenomena subjectively (Salingaros and Mikiten 2002), measure the frequency of keywords (Do 2016), or provide theoretical background (Yoon 2009). In other words, there were no studies to objectively measure and observe memes in architecture.

Therefore, in this study, the method of measuring and observing memes in architectural discourse was proposed, and the memes were researched accordingly.

3. Meme research methods

In human culture, language is considerably important. Humans mostly think in language, and language can share, record, move, and remember abstract concepts (Dennett 2006). For this reason, text is also an essential tool for memes.

There is a form of human imitation called “Copying Instructions” (Blackmore 2010). For example, making food is easier and more efficient when using a recipe rather than just looking at the dish itself. Likewise, music can be replicated with a notably high accuracy by reading sheet music. In other words, as a component of meme production, instructive texts have replicative accuracy, longevity, and strong propagative powers (Figure 2).

Famous architects have taken advantage of these techniques to increase their influence (Figure 3). In 1920, Le Corbusier founded the magazine *L’Esprit Nouveau* and introduced his works in text and photographs. Dutch architect Rem Koolhaas began his architectural career as a journalist, not an architect. Further, Kim Soo-Geun, a famous Korean architect, also
discussed his works and ideas when he began publishing the architectural magazine *SPACE* in 1966.

While text mining has the advantage of being able to quickly analyze a text in large quantities, it is difficult to identify literary expressions, similes, and metaphors correctly. Many methods of conventional text mining, including morphological analysis, vector space modeling, and semantic network analysis, also have the same shortcomings. There are ways to supplement these shortcomings by using machine learning or artificial intelligence, but more development is still needed (Kim 2017). Therefore, in this study, the text will be researched and analyzed manually.

### 3.1. Setting of research target

The subjects of meme analysis in this study are the texts of architects or critics, and the following conditions are required to increase reliability:

1. texts that have been published for as long as possible;
2. texts from as many architects as possible;
3. a lack of a tendency to subjectively analyze text from a particular architect or subject; and
4. texts with wide circulation.

Given the above conditions, it was determined that a regular series of publications would be appropriate to study, and the architectural magazine *SPACE* was selected as the text to be researched.

Since its founding by Kim, *SPACE* magazine has continued to be published every month. Each issue is rich with text and includes a wide range of feature articles, news updates, opinion pieces, critical reviews, interviews, and studies from architects, critics, and scholars. It also has the largest number of copies and the largest readership in Korea. (Kahm 2010) It was officially listed in the Art and Humanities Quote Index (A&HCI) in 2008, the first of its kind in Korea (www.vmspace.com).

We grouped the various kinds of text that appear in *SPACE* as shown in Table 1.

Among the texts in the table above, we decided to research the work reviews and interviews with the architect. This is because these texts best reflect the trend of the times, are easy to form discourse, and are not biased. Special articles and topics were excluded because the editorial department of a magazine could artificially set them and thus could reflect biased opinions. The reason for bias is due to the characteristics of *SPACE*. This is because *SPACE* was founded by Kim, and so many of the old featured articles dealt with him.

### 3.2. Research method setting

#### 3.2.1. Capture and collect memes

If an architect mentions another person’s ideas, works, or writings in the text, it can be said that he or she received those memes. Therefore, we highlighted the sections of the text where a writer referred to others and, as shown in Figure 4, correspondingly recorded the author’s name, the person mentioned, and the content of the article.

![Figure 2. Diagram of instruction copy.](image)

![Figure 3. <L’ESPRIT NOUVEAU> by Le Corbusier, <Delirious New York> by Rem Koolhaas, <SPACE> by Kim Soo-geun, <Beauty of Poverty> by Seung Hyo-sang.](image)
Figure 4. Example of gathering memes from text.

Table 1. Classification of texts in architectural magazine.

| Purpose of writing          | Author                                      | Text type  |
|-----------------------------|---------------------------------------------|------------|
| Introduction of works       | The architect who designed the work         | Description|
| Introduction of works and   | The architect/critic/scholar who doesn’t    | Description|
| Special Topic Criticism/    | designed the work                          |            |
| Research                    | Architect/Critic/Scholar                    |            |
| Special Topic Debate/       |                                             |            |
| Talk                        |                                             |            |
| Column                      |                                             |            |
| Architect interview         |                                             |            |
| Contemporary opinion        |                                             |            |
| News brief                  | Magazine editorial department               | Description|

However, not all mentions and quotations are memes. Poor evaluation or simple quotes as data are not considered because it is difficult to have affected the writer. Next, we recorded the names of the person mentioned along with the mention sentence. The writer of the text was recorded as a “Meme Receiver” and the person who was mentioned as a “Meme Sender.” In addition, personal information about these figures, including name, occupation, nationality, gender, and birth year, was also recorded. When researching the contents of memes, it is often impossible to know the intent of the text writer only by looking at the sentence, so it is often necessary to read the entire text. In this way, details, subtitles, main titles, and themes are summarized and recorded. Table 2 shows an example in consideration of all the above.

3.2.2. Purification and classification

Memes researched by this collection method have various contents. To analyze these memes, it is necessary to group similar contents and separate them from other memes. For example,

“Decoration is a sin”—Adolf Loos
(Kim Ho-min, Recovery of the skin, Uncover the potential space, May 2015).

We can infer that the content of this passage is about minimalism. Since minimalism is a part of the broader architectural style of modernism, this quote can be classified as part of the “Minimalism” meme and the “Modernism” memeplex. “Memeplex” refers to a group of similar memes (Dawkins 2013). Thus, for example, “minimalism,” “purism,” “five principles of architecture,” “domino system,” and “form follows function” are memes that comprise the “Modernism” memeplex.

Table 2. The example of recording research items of Meme.

| Issued date | July 2017 |
|-------------|-----------|
| The object of critic | MVRDV |
| Meme Receiver | Lee Mina |
| Occupation | Architect |
| Meme Sender | Francis Ponge |
| Name | Male |
| Occupation | Writer |
| Nationality | France |
| Birth year | 1899 |
| Text type | Critic |
| Text subheading | On Seoullo 7017 |
| Text grand title | What do we walk on an overpass for? Seoullo 7017 |
| Mention sentences | In “Sunday or the Artist,” Francis Ponge described the tree as this. “…” They spend their time entirely without sacrificing the virtues of their integration at the expense of the minerals surrounding them “…It leads to the space they occupy little by little…” Although nature has been pushed into the artificial world, it will be a place where one can witness the fact that the tree transcends the circle and is always new in its environment. |
| Meme type | General mention |
| Extraction keywords | #Artificial #Tree #Landscape |
| Mentioned work | Seoullo 7017 |
| Summary and categorize of | Landscape architecture |
3.2.3. Network creation and index calculation
Through the previous steps, memes collected from the text have been assigned particular attributes, including “Meme Sender,” “Meme Receiver,” content, and category. To examine the relationship between these memes, the attributes are made into nodes, then networks, and various indicators are calculated. However, this study will not go through this process because this study will cover only the contents of memes, not the senders and receivers of memes. These processes will be implemented in subsequent studies.

4. Results
Using the research methods discussed above, 601 volumes of SPACE magazine published from March 1967 to April 2018 were researched in total. Of the total 601 issues, a total of 708 memes were extracted from 209 issues, except for issues that failed to yield memes owing to a lack of adequate text to research. In this way, an average of about 3.4 memes per volume were extracted (Table 3).

The total 708 memes could be classified into 291 meme groups according to the details. These 291 kinds of meme groups could be divided into five subtypes: 1. Architectural thinking and discourse; 2. Thinking and discourse in other fields; 3. Design and practice; 4. Artistic attitude; and 5. Simple influence. The contents of these 291 meme groups were then classified into 24 memeplexes.

4.1. Meme contents statistics
Table 4 lists the top 10 memes in descending order, from most mentions to least mentions.

The memes of “Modernization of tradition,” “Sense of place,” and “Architecture that embodies life” were mentioned most frequently at 14 times, followed by “Minimalism.” It should be noted that the number of times mentioned does not directly correlate to a meme’s influence. The reason is that the number of extracted texts varies depending on the era. For example, the influence of a meme mentioned five times in the era when 10 texts were extracted and a meme mentioned 10 times when 50 texts were extracted should be evaluated differently. Therefore, we decided to determine a meme extraction ratio by considering the number of texts in the era in which the meme was extracted.

By considering the meme extraction ratio by period, we found that “Modernization of tradition” occupied the top position with 0.189, “Minimalism” ranked second with 0.112, and “Role model” came in third with 0.090. This shows that the “Modernization of tradition” meme has received the most attention from Korean architects since the 1960s when there were few texts.

4.2. Memplex statistics
Exclusively looking at individual memes is not a productive method to determine discursive shifts in large units. Therefore, it is necessary to examine the memeplexes, the statistics of which are shown in Table 5.

The most frequently mentioned memeplex since SPACE magazine was founded is the “Sense of place” memeplex, followed by “Modernism” and “Phenomenology.” However, as previously stated, it is necessary to consider the meme extraction ratio by period (Figure 5), and Figure 6 shows the ranking change.

As shown in the Figure 6, “Modernism” ranks high in both the number of references and meme extraction ratio by period, showing that it is the most influential memeplex regardless of time period. However, the rankings of other memeplexes have changed. Memeplexes such as “Tradition” and “Form” have higher rankings considering the number of texts according to period than the ranking based on the number of mentions.

This shows that Korean architects were more influenced by these memeplexes in the past when there was not much text. Conversely, memeplexes such as “Sense of place,” “Phenomenology,” “Philosophy of Becoming,” and “Post-structuralism” rank higher in number of mentions but lower in rank considering

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Table 3. Basics about researched books.

| Issued date   | 1967.3 ~ 2018.4 |
|---------------|-----------------|
| Total number of books targeted for research | 601 |
| Number of books in which Memes have been extracted | 209 |
| Number of extracted Memes | 708 |
| The average number of Memes per book | 3.4 |

Table 4. Top 10 Memes.

| Meme name                  | Number of times mentioned | Meme extraction ratio by period |
|----------------------------|---------------------------|---------------------------------|
| Modernization of tradition | A                         | 14                              | 0.189                           |
| Sense of place             | A                         | 5                               | 0.064                           |
| Architecture that embodies life | A                          | 13                              | 0.076                           |
| Minimalism                 | A                         | 11                              | 0.112                           |
| Sense and perception of space | D                        | 10                              | 0.053                           |
| Communication with society | D                         | 9                               | 0.090                           |
| Role model                 | D                         | 7                               | 0.037                           |
| The artistry of architecture | A                      | 7                               | 0.034                           |
| Architecture and Memory    | D                         | 7                               | 0.045                           |
| Novelty                    | D                         | 7                               | 0.053                           |
Table 5. Statistics of all Memeplexes.

| Memeplex name          | Type | Number of times mentioned | Meme extraction by period |
|------------------------|------|---------------------------|---------------------------|
| Sense of place         | A    | 40                        | 0.170                     |
| Modernism              | A    | 36                        | 0.301                     |
| Phenomenology          | A    | 33                        | 0.151                     |
| Architecture and De-constructionism | A | 27                        | 0.114                     |
| Form                   | C    | 26                        | 0.293                     |
| Space                  | C    | 26                        | 0.145                     |
| Philosophy of Becoming | B    | 19                        | 0.083                     |
| The essence of architecture | A | 17                        | 0.087                     |
| Daily life             | A    | 17                        | 0.144                     |
| Post-structuralism     | B    | 16                        | 0.076                     |
| Tradition              | A    | 16                        | 0.195                     |
| Architecture and capitalism | A | 14                        | 0.063                     |
| Structuralism          | A    | 13                        | 0.052                     |
| Taoism                 | B    | 12                        | 0.074                     |
| De-constructionism     | A    | 12                        | 0.052                     |
| Working process        | C    | 11                        | 0.052                     |
| Structure              | C    | 11                        | 0.054                     |
| Plan                   | C    | 3                         | 0.026                     |

Figure 6. Ranking change of meme extraction ratio by period.

The number of texts by period. This shows that these memeplexes have influenced Korean architects more recently than in the past.

5. Conclusion

British evolutionary biologist Richard Dawkins proposed the concept of “meme” in his book The Selfish Gene. A meme is a kind of “cultural gene,” which, as with real genes, has the evolutionary mechanisms of heredity, mutation, and selection and the property of spreading itself. This study attempted to capture and examine memes that appear in Korea’s modern architectural discourses.

It was judged that the best way to capture memes within architectural discourses was to perform a textual analysis. By selecting the widely circulated SPACE magazine, the first Korean publication dedicated to architecture, as a research target, we were able to research and analyze meme receiver, sender, and content.

As a result of researching a total of 601 issues of SPACE magazine published between 1967 and 2018, the total number of memes extracted was 708. If these memes were divided according to content, they could be divided into 291 meme groups, and if these memes were classified into memeplexes (groups of memes with similar contents), they could be divided into 24 categories. After analyzing the influence of these memeplexes in consideration of time period, it was found that the “Tradition” memeplex had great influence in the past, while philosophy-related memeplexes such as “Sense of place,” “Phenomenology,” “Philosophy of Devenir,” and “Post-structuralism” have been influential more recently. However, it was found that the “Modernism” memeplex has had the greatest influence on Korean architects over time.

However, there are limitations to this study. In this research, we analyzed memes in architecture using
text-based analysis, but since architecture is a visual art, it is also possible to examine the architectural drawings, styles, and construction. However, these visual analyses are largely qualitative, making it difficult to conduct data analyses, so we used text.

Additionally, this study covered only the meme contents of Korean contemporary architecture courses. Subsequent studies will need to show the complex relationships between meme contents and the figures who send and receive these memes.

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No potential conflict of interest was reported by the author(s).

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