Study of Contemporary Painting Representation Language Based on the Association Rule

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Abstract

Painting language is the painting skill integrating artistic expression approaches, such as color, line, light, theme and image. During the constant pursuit and exploration of the painting art in the contemporary society, the special type with the penetration of multiple painting styles and the fusion of multiple cultures has been formed. The pursuit for all painting creators throughout the life is to use the influencing mechanism of the painting style to the vivid field. In this study, the Apriori association rule operation model under the theoretical framework of contemporary painting representation language has been designed through analyzing the artistic form of contemporary painting works, and selecting the contemporary painting Apriori association rule variables. It is carried out with the aim to explain the artistic expression language in the painting style through the association rule, balance the mutual influencing effect in different painting language representation forms based on the support degree and trust degree, and thus provide the reference for the theoretical study of contemporary painting representation language.

Keywords: Correlation Degree Model, Painting Representation Form, Artistic Language, Formation Mechanism, Perception Dimension.

1. STUDY BACKGROUND

1.1 Literature overview

The artistic form of contemporary painting works has inherited the esthetic form of traditional painting basis to a very large extent, and also made proper adjustment and reform on the basis of the traditional painting (Lin and Liu, 2017). The study of the association rule for the painting form involves the summarizing of the internal link with the Apriori algorithm and the expression form of artistic language, selecting the related variable and bringing it into the Apriori algorithm, and distinguishing the mutual influence mechanism between the variables (Gu and Zhang, 2017), so as to distinguish more effective artistic creation method, and provide the theoretical base for the representation language of contemporary painting. Then the theoretical base is also the design support for laying foundation of the painting creation language, and the quantitative standard can provide the creation materials with higher trust degree for more designers, and thus provide the quantitative criteria of theoretical reference for the painting art creation.

1.2 Study objective

The earliest question raised about the association rule was the consumption principle summarized on the basis of the consumer shopping habits. The association rule variables are classified by the consumption habits, and virtually, the commodity marketing strategy designed while considering the customer consumption demand (Li and Shen, 2017). If the association rule is used in the representation language analysis of contemporary painting, then it is possible to define the fusion and penetration mechanism of multiple painting styles, and thus develop contemporary painting representation model with higher adaptability in the rich artistic language representation forms. Such forms can present the painting art language in an objective manner in front of the artist and the appreciator and serve as the bridge for the communication between them, and thus inevitably boost the development of contemporary painting (Zhong and Huang, 2017). For this purpose, this study has analyzed the distinguishing of the art forms of the contemporary painting works, and extracted the related support degree variables of the association rule, to facilitate the design of the theoretical system with higher universality for correlation degree model of contemporary painting representation language, and support the development and progress of contemporary painting.
2. DISTINGUISHING OF THE ART FORM OF CONTEMPORARY PAINTING WORKS

2.1 The light, simple and elegant traditional Chinese painting charm

The traditional Chinese painting style of the Chinese ink and wash has had a long history, and its far-reaching artistic perception is the cultural and spiritual basis for being inherited till now. Its painting subject mainly takes the sketching style of mountain and water, figure, flower and bird (Peng and Xu, 2016). In the postmodern humanism trend, the representation form of the traditional Chinese painting is extended, and its own artistic expression form is also effectively extended. But as an important branch of the national traditional culture, it is not divorced from the artistic perception of natural and harmonious beauty in the artistic expression form. Therefore, though traditional Chinese painting has been fused with multiple cultures in the representation form, its fundamental artistic expression language is still traditional and simple. Its freehand brushwork has not lost its expression strength in the inheritance of the traditional culture, but has been sublimated after the fusion with different cultures, thus producing the comprehensive painting style with multiple artistic language expression forms, such as green mountain and water, golden mountain and water, imperial-court decorative painting, and elaborate-style painting.

2.2 Oil painting form of European ink and color

Oil painting originated in the 15th century in Europe, taking the tempera painting as the prototype in the painting creation, and with subsequent improvement of the painting materials by the Netherland painter Jan Van Eyck, the oil painting art with the painting canvas as the carrier can be fully developed. For the development of contemporary oil painting art till now, its largest difference from the traditional oil painting lies in the extension in the artistic expression context. Traditional oil painting style takes the figure, architecture and scenery as the themes, while contemporary oil painting creation has extended it to wider crude materials, particularly deriving the special style of science fiction painting (Zhao et al., 2016). Such artistic language expressiveness has been detached from the limit of thinking in the traditional oil painting creation. It has attached more outstanding image rendering for oil painting artistic expressiveness. In addition, 3D painting and hand wall painting has broken through the space limit of oil painting, extended the optimized artistic language representation form into the scope of the unlimited imagination in the thinking space, forming the unique style of contemporary painting.

2.3 Japanese caricature characteristics with simple outline

Japan is the initiator and forerunner for the development of caricature, and has transformed the method of contemporary painting representation form to a very large extent. While in its exaggerated representation form, the art control for the object itself is not restricted in the painting picture, but highlighting the keynote of the painting picture in the form of eulogy or satire, creating the artistic language symbols, such as analogy, implication, symbolizing, deformation and innuendo, for the artistic forms of the painting itself, and thus pushing the development of contemporary painting (Li and Guo, 2015). The caricature themes come from the life, but are not limited to the inflexible fettering of the life itself, and with the exaggerative creation approach, the caricature figures can be simply sketched with simple lines, so its artistic expressiveness becomes clearer. In addition, since the artistic language of caricature itself is composed of multiple caricature pages, its story and continuity have formed special charm of contemporary painting language representation form, and won the favor of a large number of amateurs.

2.4 Modern freehand painting of free flowing style

Picture is the language of the designer, while contemporary painting has not been limited to the representation form of the picture works itself. In a relative manner, the painting language expressiveness has gone into multiple fields related to the esthetics, such as space art, home outfitting design, shop window design, costume display, architectural drawing design and garden planning and so on. While the modern freehand painting is a necessary basic painting element for the use of the painting language in multiple fields. From copying the actual object or the design element, it creates the differentiated artistic language representation path for different thematic styles, which is the main characteristic of contemporary freehand painting style (Xu and Guo, 2014). On this basis, the freehand picture has expanded the space of language representation form for the contemporary painting from the sketch to the design drawing, thus achieving the interconnection and fusion of multiple painting cultures, and innovating the development and representation space of the painting art.
3. SELECTION OF APRIORI ASSOCIATION RULE PARAMETERS FOR CONTEMPORARY PAINTING

The association rule is originally separated from the selection of the of the consumer motive. When the consumer has understood their own consumption demand, can they summarize the consumption behaviors. While the final objective of the association rule is to study the habit and principle with the object under the orientation of the consumer (Xu et al., 2014). Therefore, the association rule is equivalent to the development space of transformation from the known item to the unknown item, consisting of the guide by LHS association rule and RHS succeeding association rule. In the association rule, X represents the support degree, and Y represents the trust degree. During the study of the association rule of contemporary painting in the artistic expression form and its language direction, it is required to firstly choose proper known parameters as the support degree for computation, then deeply explore the trust degree from the support degree, and summarize the output form and characteristic expressiveness of artistic language of contemporary painting, and lay the theoretical and practice foundation for subsequent study.

While there are many representation forms of painting language, and the predominant characteristics of contemporary painting lies in the edification and rendering of multiple cultures, and it is common with comprehensive use of traditional Chinese painting, oil painting and caricature in the painting creation. Therefore, this study has defined the first-level reference variables in three aspects according to the comprehensive performance elements of contemporary painting, that is, realistic painting, exaggerated painting, and symbolic painting. These three representation approaches of contemporary painting have their respective features, but they have the same goal. Once they are used properly, they will be beneficial for the birth of brand new creation form. Then, summarizing the representation form of multiple painting languages is also the representation method designed according to the artistic image of the painting itself. If the creation mechanisms are further classified, it can provide the known X support degree reference variable for the association rule.

3.1 “Realistic” form of painting representation language

“Realistic” painting style has particularly outstanding expressiveness in the painting forms related to traditional Chinese painting and oil painting, and as the most traditional painting art language representation form, it has sketched the scenery characteristics in the nature with the simplest representation form, thus communicating the visual information to the appreciator with the realistic language, painting out the spirit with the form, and moving the people with emotion, as shown in Figure 1. In the typical works “Steel Water- Tear” with the realistic painting representation language form, the figure image is rendered without special painting skills, but only requiring the figure in specific scenario to represent the corresponding humanistic color, thus stimulating realistic language characteristics in the original works, and making the humanistic color of the steelworker stand out, triggering the emotional demand of the appreciator, and achieving the profound representation of the artistic implication (Liu and Sun, 2013). Since such “language” has briefly conveyed the most vivid emotional expression, it can be considered also as the critical reference variable in the painting language representation form.

![Figure 1. Representational Work of Realistic Painting Representation Language “Steel and Sweat”](image)
3.2 “Exaggerated” form of painting representation language

Contemporary painting has largely transformed the representation form of the realistic painting style according to the esthetic concept of the modern society, looking for the cut-in point of artistic form in the exaggerative painting representation language. While such language representation form is particularly outstanding in the contemporary caricature, taking “One Piece series caricature” as an example, as shown in Table 1. On one hand, for the One Piece series caricature main character “Chopper”, the animal was taken as the prototype reference in the creation of the figure prototype, to design the personified image painting language. On the other hand, for One Piece series caricature main character “Luffy”, the prototype design followed the exaggerative representation of the human actions, to highlight the expressiveness of the painting language and visual tension. Then in the exaggerative painting representation language, it has evoked the resonance of the appreciators more vividly, so it has stimulated the space for imagination of the appreciators with respect to the expression of the artistic language. It has explored brand new dimension of thinking for the representation form of artistic language of contemporary painting.

Table 1. Exaggerated Form of Painting Representation Language Representative “the One Piece Series”

<table>
<thead>
<tr>
<th>The protagonist of the series “Joba”</th>
<th>The protagonist of the series “road flying”</th>
</tr>
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<tbody>
<tr>
<td>Based on the animal model, the anthropomorphic image painting language is designed</td>
<td>The expressive and visual tension of the painting language is highlighted by the exaggeration of the action of the characters</td>
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3.3 “Symbolic” form of painting representation language

“Symbolic” form of painting representation language is not initially used in the prototype of contemporary painting, but it had been used as early as in the ancient Roman times and even in the earlier Chinese civilization. The painting description of the imagined object was the earliest symbolic form of painting representation language. While in the same period, the abstractionist painting style emerging in Europe was also the specific artistic vocabulary based on symbolic artistic expression form. For example, in the world-famous workpiece “The Starry Night” by Van Gogh, the alternating arrangement of three primary colors and some grey color has brought some visual dynamics and association to the audience, and created the abstract representation form for the description of the specific scenery in the starry night (Li and Xie, 2013). As “symbolic” form of the painting representation language has developed into the contemporary painting art, it formed the more extensive 3D visual art. The visual effect of 3D painting is shown as in Figure 2.

Figure 2. The Visual Effect of the Visual Effect of the Body Reference
4. CONTEMPORARY PAINTING REPRESENTATION LANGUAGE THEORETICAL FRAMEWORK AND OPERATION MODEL BASED ON THE ASSOCIATION RULE

4.1 Contemporary painting representation language theoretical framework based on the association rule

The development and extension of modern esthetics has implicated the symbolic approach into the painting language to a very large extent, and according to the esthetic habit and experience in the modern society, has provided different perspectives of appreciation for the appreciators. Therefore, abstract painting style has been not limited to the creation of traditional oil painting, and the symbolic representation approach has become a specific painting language representation form and been integrated into the contemplation of the modern art, and formed strong penetration with the traditional Chinese painting, caricature and oil painting (Li and Tu, 2013). From Figure 3, it may be seen that the design prototype referred the Chinese classical mythology, while the painting representation form mainly depends on caricature, and the most fundamental oil painting creation approach has been used. therefore, in the artistic expression language representation of contemporary painting, the penetration mechanism is the necessary basis for pushing the development of modern esthetics. Then, the association rule is equivalent to the special representation form by analyzing the classification characteristics of design elements, deeply exploring the image charm from the overall structure of the painting style, and transforming it into the contemporary painting.

4.2 Apriori association rule operation model under the contemporary painting representation language theoretical framework

According to the study view of Han Jiawei et al. in Apriori association rule, association rule is defined as: correlation degree subset $\mathit{1}$ under the effect of multiple influences. In the given known database $\mathit{D}$, the reference item is set: $\mathit{A_1}$ “realistic” form of painting representation language, $\mathit{B_1}$ “exaggerative” form of painting representation language, and $\mathit{C_1}$ “symbolic” form of painting representation language (Liang and Xu, 2011). The support degree of the association rule itself in $\mathit{D}$ inevitably involves the threshold space occupation ratio of $(x, y)$, where the design probability is used as the operation set, then it is possible to find out the maximum threshold space most suitable for the intersection of multiple cultures. In this threshold space, $\mathit{y}$ has the highest trust degree, and can be considered as the development condition supporting the truth of the association model, that is, three artistic expression languages $\mathit{A_1}$, $\mathit{B_1}$ and $\mathit{C_1}$ have reached the best effect of fusion. The operation model is:

$$D_l = \sum_{i=1}^{x} \frac{A_1i + B_2i + C_3i}{d} (A_1 + B_2 + C_3)/y$$ (1)

In this formula, the correlation degree of $\mathit{y}$ trust degree has been built for the value space of the support degree $\mathit{x}$ and $\mathit{A_1}$, $\mathit{B_1}$ and $\mathit{C_1}$, so from its operation results, it is possible to find out the forming principle for the matching with the painting art representation language (Bai and Xia, 2011). If it is used in the painting art creation, it can maximize the representation form of $\mathit{A_1}$, $\mathit{B_1}$ and $\mathit{C_1}$ artistic languages, stimulate the creation source and spark the inspiration with the artistic approach of higher fusion, and provide the data support and theoretical reference for the artistic creation of contemporary painting.

5. CONCLUSION

In summary, contemporary painting art has not been limited to the individual painting style forms, but covering multiple cultures, but found out the characteristics of the painting language representation form from the painting styles, such as traditional Chinese painting, oil painting and caricature, thoroughly and comprehensively understood and used them, thus capable of achieving the artistic expression effect beyond the painting limit (Wang et al., 2016). By selecting contemporary painting Apriori association rule parameters (symbolic, realistic, exaggerated), it is possible to provide the support degree parameters for the association model, and taking this as the reference quantitative standard of the operation model, it is possible to solve the maximum effect for the fusion of the representation forms of $\mathit{A_1}$, $\mathit{B_1}$, $\mathit{C_1}$ artistic languages from the rule operation model, and then summarize the formation principle for the matching with the painting art representation language, and provide the theoretical base and quantitative criteria for the development of the painting language representation form. Then its theoretical base is also the design support laying the foundation for the painting creation language, while the quantitative criteria also provide the creation materials with higher trust degree for more designers. Therefore, it is possible to take Apriori association rule operation model as the basis for interpretation of the theoretical
framework for contemporary painting representation language, and achieve the expected best effects for the fusion of multiple painting elements with the styles.

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