



# Exploring the Influence of Digital Technology on Art Works Based on the Cross-media Theory — Taking the Banquet at Tang Palace as an Example

**Jie He**

Dalian Polytechnic University, Dalian 116000, Liaoning, China

DOI: 10.32629/asc.v5i2.2204

---

**Abstract:** After the breakthrough of digital technology integration in 2021, the “Lotus Cup”-winning work “Tang Servant” was renamed “Tang Palace Banquet.” It was performed at the Spring Festival Gala of Henan Satellite TV, effectively generating the year’s national IP. Few academics have conducted empirical research on the impact of digital technology, despite its prominence in the present discourse regarding the Banquet at the Tang Palace. On the basis of Ellerstrom’s multimodal art theory and Ryan’s story world theory, this study will use empirical research methodologies to investigate the impact of digital technology on the audience’s comprehension of art symbols. Combining the characteristics of Chinese traditional culture with strategic recommendations for the re-innovation of traditional culture from the perspective of digital technology application, this paper contributes significantly to the contemporary innovative inheritance and efficient communication of Chinese traditional culture.

**Keywords:** multimodal, digital technology, empirical research

---

## 1. Introduction

After the innovation of digital technology integration in 2021, the dance work “Tang Palace Maid” was renamed “Tang Palace Banquet” and broadcast on the Spring Festival Gala of Henan Satellite Television. It was highly accepted on the network and debuted with success. Henan Satellite TV continued to create series of programs centered on the “Tang Palace Banquet,” such as the Fantastic Tour series, in response to the positive reception, and the “Tang Palace” mania swept the nation. Currently, the discussion on this IP focuses mostly on two directions: the creative content of “Banquet of Tang Palace” to explain its cultural connotation and the communication effect and strategy of “Banquet of Tang Palace.” Although several papers emphasize the intervention of digital technology, there is a dearth of empirical research examining the effects of digital technology’s adaptation. It is a common occurrence for digital technology to influence contemporary artistic creativity, however, for the creative transformation and effective communication of traditional culture, it is crucial to clarify the position of new technology.

## 2. Theoretical Basis and Research Hypothesis

### 2.1 Multimodal Art Media Theory

Lars Ellerstrom established the multimodal media theory based on the research of transmedia theory, thinking that “all media are multimodality.” Multimodal refers to the gathering of emotion and skill. He believed that “material modality,” “sensorial modality,” “spatiotemporal modality,” and “semiotic modality” constitute “fundamental media,” including still images, symbolic body expression, etc. After the evaluation of historical traditions and aesthetic experience, the fundamental media, such as music, art, and dance, become the “qualified media.”

The four modes are not arranged arbitrarily. According to Ellerstrom, the meaning of artworks or qualified media begins at the physical level, and the “sensorial modality” is the next stage. Since this is a prerequisite for the “spatiotemporal modality,” we must have the perceptual capacity to extract meaning from time or place. The phase of final interpretation for “semiotic modality” has arrived. Based on the other three modes, “semiotic modality” is also the mode with the highest complexity. In other words, “semiotic modality” is frequently influenced by the preceding three modalities, and the interpretation of the meaning of artistic works frequently relies on certain media modes. To interpret the “semiotic modality” of a painting, for instance, requires visible line colors and spatial planes.

The concept of “technical medium” must be emphasized within multimodal media theory. According to Ellerstrom, a technical medium is any object, physical phenomenon, or medium that can display or materialize basic or qualified media, such as television, digital technology, and so on. Specific technical media will exert a moderate to substantial impact on all eligible media. When the technical media configuration of qualified media changes, the “material modality,” “sensorial

modality,” and “spatiotemporal modality” of qualified media will also change, influencing the interpretation of “semiotic modality,” i.e. the shift in the cognitive structure of artworks.

The original version of “Banquet at the Tang Palace” retains its “iconic body language.” The introduction of digital technology is the most significant development. “Banquet in the Tang Palace” employs augmented reality (AR) and fifth-generation (5G) technology to create more immersive stage scenarios for the audience, such as the construction of a museum scene at the beginning, a palace scene in the middle, and a palace wall scene at the end. The increase of visual text created by digital technology enriches the sensorial modality in qualified media, and the addition of multi-dimensional scenes in the spatiotemporal modality enriches the spatial mode, which has an effect on the semiotic modality and consequently influences the cognitive construction of dance works by the audience. Eilerstrom subdivided the semiotic modality into three modes based on Peirce’s three-part symbol theory: convention (symbolic sign), similarity (iconic signals), and contiguity (indexical signs). In the analysis of multi-modal works of art, all three modes must be considered, and the cognitive construction of the audience must be analyzed from the perspective of these three modes.

Therefore, this study proposes hypothesis 1, which states that the incorporation of digital technology into works of art can complete the cognitive development of the audience.

## 2.2 Story World Theory

According to Ryan’s idea of cross-media storytelling[2], the key to capturing the audience’s imagination resides in the fact that popular culture in the digital age prioritizes “listener orientation.” That is, “Give the audience what they want,” and the argument that modern readers are never happy with their favorite creative properties. The purpose of the digital version of the Banquet in the Tang Palace is to better suit the demands of the audience by incorporating information originally collected from various media into the dance. Exposing the body to the embodiment in a 5G and AR composite dancing environment may make the audience more recognizable and accessible(Zeng Yiguo,2021).

In conclusion, this research proposes hypothesis 2, which states that the incorporation of digital technology completes the cognitive development of the audience and enhances their recognition of artistic works.

According to Ryan’s definition of the narrative world (2020), the story world is the sum of the contents of the various media used to extend a story. After its transmission, the digital version of Banquet of the Tang Palace garnered a tremendous reception, culminating in a series of programs centered on Banquet of the Tang Palace that comprise the Banquet of the Tang Palace’s tale universe. Ryan feels that the primary reason for the effective creation of the story’s universe is because the audience is devoted to it and desires more information. In other words, Banquet in Tang Palace skillfully constructs a given and concrete Tang Dynasty background universe while simultaneously fulfilling the cognitive structure of the audience. The audience is anxious to learn more about the background environment of the Tang Dynasty.

In conclusion, this research proposes hypothesis 3, according to which an increase in the recognition of artistic works can boost the audience’s desire to comprehend relevant culture.

## 2.3 Construct Conceptual Model

Based on the aforementioned theories, the addition of modern media has altered the original Banquet at Tang Palace’s “material modality,” “sensorial modality,” and “spatiotemporal modality,” hence influencing the semiotic modality. To analyze the cognitive construction of the audience is to examine the capacity to interpret the semiotic modality. In this study, the cognitive construction is measured along three dimensions: the audience’s knowledge of the convention (symbolic sign), resemblance (iconic signs), and contiguity(indexical signs) in creative works. The level of cognitive construction influences the audience’s recognition of creative works, and the audience’s recognition of artistic works influences the fans’ desire to comprehend the universe of linked stories. This study constructs the following conceptual model.see Figure 1

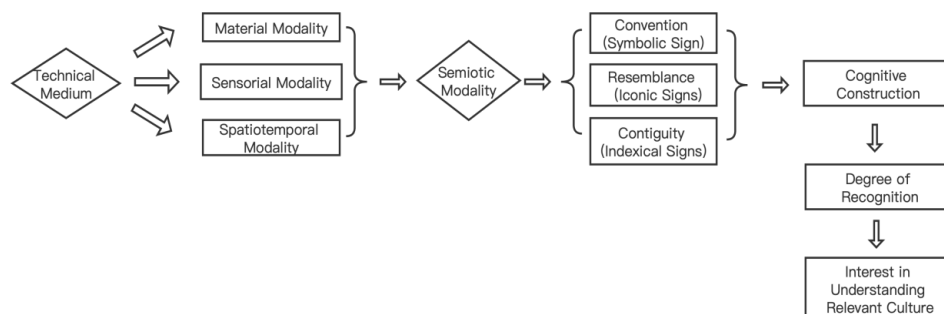


Figure 1. Conceptual model of cognitive construction

### 3. Data and Methods

#### 3.1 Multimodal Art Media Theory

To further investigate the impact of digital technology on the development of audience cognition, the author undertook an exploratory study. The experimental objects were primarily college students and postgraduates aged 18 to 26 who were potential recipients of Guocao culture. Through snowball sampling, a total of 241 questionnaires were distributed, and 241 were valid. Simultaneously, the samples were separated into two groups. Group A (134) was requested to watch the Banquet of the Tang Palace video without digital technology adaptations, whereas Group B (107) was asked to watch the Banquet of the Tang Palace video with digital technology adaptations and complete the questionnaire.

#### 3.2 Questionnaire Design and Research Methods

The questionnaire was based on previous research, For the division of portrait symbol, indication symbol, and symbol, as well as the interpretation of symbol in “Tang Palace Banquet,” Tribune presents a single option and two similar alternatives (Questions 6 to 12). By adding the number of accurate responses to the questionnaire, the cognitive construction evaluation score is calculated. The audience’s cognitive structure is more complete the higher the assessment score.

To determine the degree of recognition with the works of art, a scale question titled “13.How much do you like the Tang Palace Evening Banquet?” was posed. The questionnaire “14.Would you like to watch TV shows about the Banquet of Tang Palace or study about associated historical culture and artistic works? “ was created to gauge your interest in the universe of the story. The reliability and validity of both questions were assessed using a 5-point Likert scale(in question 13 and 14, 1=strongly disapprove, 5=strongly approve), followed by an analysis of the data.

**Table 1. Variables Construct**

Latent Construct	Items	Symbol classification	Reference
Single choice			
Cognitive structure test of Tang Palace banquet	6. What do you think is the style (including color, dress and makeup) of the dancers in the banquet of Tang Palace? A. From the Tri-colored Glazed Pottery of Tang Dynasty. B. From the Terra-Cotta Warriors of Tang Dynasty		
	7. What do you think is the scene when the dancers first appear in Banquet at Tang Palace? A. Palace B. Museum		
	8. How many times do you think the dance scenes were changed in Banquet at Tang Palace? A. Three times B. Five times	symbolic sign	
	9. What do you think the dancers are showing in the video from 3 minutes 27 seconds to 55 seconds of the third minute? A. Girls get together to share their feelings and talents B. The girls gathered at one time to admire the reflection in the water		Kou Mengqian et al. (2022)[3]
	10. At the climax at the end of the dance of Banquet at Tang Palace, what do you think of? Vivid and specific portrayal of the life of the maids in the Tang Dynasty The prosperity of banquet in Tang Dynasty	indexical signs	
	11. At 4:47 of the video, when the dancers line up in two rows, what do you think of? A. foreshadowing the formation changes during the climax with two formations B. The girls are ready to perform		
	12. Do you think the dance of Banquet at Tang Palace symbolizes A. It symbolizes the harmonious scene of girls playing and participating in performances in the Tang Dynasty B.It symbolizes the prosperity and magnificence of Tang Dynasty culture	iconic signs	
Scale question			
Degree of Recognition	13. How much do you like “Banquet at Tang Palace”?	Five-point Scale	
Interest in Understanding Relevant Culture	14. Would you like to watch TV programs related to “Banquet of Tang Palace” or learn about relevant historical culture and artistic works?	Five-point Scale	

## 4. Research Results

### 4.1 Basic Characteristics of the Investigated Population

There are 32% men and 68% women among the respondents. In terms of age, the share of individuals between 18 and 25 years old comprised 82% of the total population. 69% of the pupils were undergraduates, while 16% were graduate students. Because the fundamental characteristics of the group under study were identical, it had less of an impact on the overall outcomes. The sample statistics display in Table 2.

**Table 2. Sample Profile**

Criterion	Frequencies	Percentages
Gender		
Male	77	32%
Female	164	68%
Age		
Under 18 years old	5	2.1%
18~30	222	92.2%
31~40	6	2.5%
41~60	8	3.3%
Educational level		
Technical Secondary School and General High School	13	5.4%
Junior College and Undergraduate	181	75.1%
Master's and Doctor's Degree	47	19.5%

### 4.2 Detailed Data Analysis

We used Spss26.0 to conduct an independent sample t-test for the mean score difference between group A and group B. There were no notable outliers in the data, which were close to the normal distribution in each group. The independent t-test shows the significant difference between Group A ( $M=3.40$ ,  $SD=1.811$ ) and B ( $M=5.43$ ,  $SD=1.252$ );  $t(234.476) = -10.85$ ,  $p < 0.001$ . Consequently, if hypothesis 1 is valid, the inclusion of digital technology in artistic works can complete the cognitive construction of the audience. See Table 3, Table 4 and Table 5.

**Table 3. Independent sample test**

		Levene Variance Equality Test	
		F	Significance
Scores for questions 6 to 12	Equal Variances Assumed	23.850	.000
	Equal Variances Not Assumed		

**Table 4. Independent sample test**

		Test for Equality of Means				
		t	DF	Sig.(2-tailed)	Mean value difference	standard error
Scores for questions 6 to 12	Equal Variances Assumed	-9.847	239	0.000	-2.027	0.206
	Equal Variances Not Assumed	-10.246	234.476	0.000	-2.027	0.198

**Table 5. Independent sample test**

		Test for Equality of Means	
		95% confidence interval of difference	
		Upper limit	Lower limit
Scores for questions 6 to 12	Equal Variances Assumed	-1.621	-2.432
	Equal Variances Not Assumed	-1.637	-2.417

For the 13 and 14 questions, the author adopted the Klonbach reliability test ( $\alpha=0.853$ ), KMO, and Bartlett tests for validity, and the validity coefficient was low ( $KMO=0.5$ ,  $p<0.001$ ). The reliability of this questionnaire is good, the validity is 0.5. See Table 6 and Table 7.

**Table 6. Reliability statistics**

Clonepa alpha	number of terms
.853	2

**Table 7. KMO and Barlett Test of Sphericity**

Kaiser-Meyer-Olkin measure of sampling adequacy	Bartlett's Test of Sphericity		
	Approximate chi-square	Degree of freedom	Statistical significance
.500	193.453	1	.000

In this study, the Pearson correlation test was employed to examine the relationship between survey scores and views regarding works. The correlation coefficient was 0.09 and the P-value was less than 0.146, suggesting that there was no correlation between the two variables; hence, a regression analysis could not be conducted. The mindset of the spectator cannot be directly altered by digitally made artworks. Therefore, we do not reject H2's initial hypothesis, which states that the addition of digital technology completes the cognitive construction of the audience but does not boost the recognition of artistic works. The correlation coefficient between the attitude of the works and the audience's desire to comprehend the relevant tale world is 0.745 ( $P0.01$ ), indicating that the correlation is substantial and that the subsequent regression can be performed. See Table 8 and Table 9.

**Table 8. Correlation**

	1	2
1.Question13	1	
2.Question14	.745**	1

**Table 9. ANOVAa**

Model		Sum of squares	Degree of freedom	Mean Squared	F	Statistical significance
1	Regression	69.983	1	69.983	298.855	.000b
	Residual error	55.967	239	.231		
	Total	125.950	240			

a. Dependent variable: (constant), question 14

b. Independent variable: Question 13

In order to further determine the data results, the author called statsmodels module based on Python 3.9 to perform regression on the original data. The analysis results are shown in Figure 2.

	coef	std err	t	P> t	[0.025	0.975]
const	0.8337	0.216	3.853	0.000	0.407	1.260
x1	0.8051	0.047	17.287	0.000	0.713	0.897
Omnibus:		95.377	Durbin-Watson:			1.839
Prob(Omnibus):		0.000	Jarque-Bera (JB):			399.697
Skew:		-1.582	Prob(JB):			1.61e-87
Kurtosis:		8.459	Cond. No.			33.7

Figure 2. Example figure

As can be seen from Figure 1, the regression result is

$$Q14 = 0.8337 + 0.8051 \cdot Q13$$

Where is the result of question 14 and Q13 is the result of question 13.

The regression coefficient is positive, and the lower and upper limits of the 95% confidence interval are 0.713 and 0.897, respectively, which are both positive. Therefore, the audience's interest in "Tang Palace Banquet"-related works is positively connected with their enjoyment of the "Tang Palace Banquet" dance.

Coefficient of determination

$$r^2 = 0.556$$

It can be seen that the regression line fits the original data well.

In general, the completeness of the cognitive structure of artistic works is not strongly correlated with their recognition. Even though digital technology can construct the audience's complete understanding, it cannot be the determining element in whether artistic works are acknowledged or not. However, the degree of recognition of artistic works is strongly correlated with the need to comprehend the tale universe. The more interested you are in cultural education.

## 5. Application Strategy of Digital Technology Number of Cases

Overall, the current application of digital technology reflects mostly two things. One is as a technological support for artistic creativity, while the other is as a communication platform for art. For the successful transformation of modern innovation into traditional culture, application measures in both areas are required. This study employed the Pearson correlation test to examine the relationship between questionnaire scores and attitudes regarding works. The correlation coefficient was 0.09 and the P-value was less than 0.146, suggesting that there was no correlation between the two variables; hence, regression analysis could not be performed. Digitally generated artworks are incapable of immediately altering the audience's perception of the works. Therefore, we do not deny H2's basic premise that the addition of digital technology completes the cognitive development of the audience but fails to boost the recognition of artistic works. The correlation coefficient between the attitude of the works and the audience's desire to comprehend the relevant tale world is 0.745 (P0.01), indicating that the correlation is substantial and that the subsequent regression can be conducted.

### 5.1 Artistic Creation

In actuality, traditional culture, as the dominant culture, is frequently referred to as "elite culture." While attempting to be exquisite, it is also easily shelfable. Traditional cultural expressions will also distance themselves from youth organizations, the driving force of contemporary culture. In conjunction with the results of this paper's research, it is clear that digital technology is not the decisive component in enhancing the recognition of the works; rather, the originality of the cultural core of the dance works is the primary cause for the audience's high recognition. The evening dinner of Tang Palace showed the traditional culture in a light-hearted, amusing, and relaxed manner. It is more in keeping with the aesthetic preferences of the people, and the performers are no longer slender and graceful, but have been restored to their Tang Dynasty fleshiness. Here, digital technology greatly benefits dancing. The "Ming Emperor," the palace scene, and the holographic projection of cultural treasures such as Tang Dynasty servants are all cultural markers with a strong connection to the original dance

theme. Banquet in Tang Palace is successful because, on the one hand, the dance work breaks the conventional choreography of classical dance based on the innovation of traditional culture; and, on the other hand, the intervention of digital technology does not arbitrarily alter the core of traditional culture, but rather integrates and symbioses, creating a highly restored historical context for the dance.

In conclusion, in terms of artistic creation, the contemporary innovation of traditional culture should, on the one hand, use digital technology to update the visual system and, on the other hand, grasp the cultural core and make digital technology serve the connotation of traditional culture prominently.

## 5.2 Art Communication

Ryan argues that digital technology qualifies as a medium for artistic expression and creation as well as a communication method. From the standpoint of digital technology as a medium for creative communication, artistic works' communication strategies are built from the top down. Jenkins considers that "in an ideal circumstance, each kind of media contributes a distinct contribution to the evolution of the story. Ryan maintains that the primary objective of cross-media narration is to present audiences with more options. People consume many forms of media, and the more media there are, the larger the potential audience. Henan Satellite TV has established a cross-media and all-platform communication line through B station, Douyin, and Weibo, so that "culture tribes" on all platforms can enjoy the Tang Palace Banquet. For "Tang Palace Banquet" to expand its opportunities, it must leave the circle. In addition, the research results indicate that the audience's interest in comprehending relevant content increases as the degree of recognition of artistic works increases. Media are more interactive and participatory in the digital age. Henan Satellite TV created a series of programs with "Tang Palace Banquet" as the center, and constructed a fictional world with "Tang Palace Banquet" as the core, based on audience feedback from several platforms.

In conclusion, from the standpoint of art communication, the use of digital technology in communication strategies might facilitate the dissemination of artistic works across several platforms. In addition, because of the improved interactivity of digital media, the relationship between creators and audiences is strengthened. Audience members are not just recipients of culture, but also participants in culture. In the age of digital media, the only method of artistic creation is based on the recognition and attention of the audience.

## References

---

- [1] Lars Elleström, *The Modalities of Media: A Model for Understanding Intermedial Relations*, in: *Media Borders, Multimodality and Intermediality*. Palgrave Macmillan Press, New York, NY, 2010, pp. 13–39. DOI: 10.1057/9780230275201\_2
- [2] Marie-Laure Ryan, *Transmedia Storytelling and Its Discourses*, in: *Transmediations Communication Across Media Borders*, New York Routledge Press, New York, NY, 2021, pp. 18–22.
- [3] Kou Mengqian, A Study on the cultural symbol Expression of the Tang Palace Banquet, *News Tribune* ,(2022)87–89. DOI: 10.19497/j.cnki.1005-5932.2022.03.005
- [4] Zeng Yiguo, Breaking the wall: The "Culture Out of the Circle" of video programs under media integration -- A case study of the series of programs of Tang Palace Banquet on Henan Satellite TV, *News and Writing* (2021) 30–35.
- [5] Qiu Daidong, The development strategy of Lingnan folk stories from the empirical study of transmedia adaptation, *Communication and Copyright*(2021)82–85.
- [6] Wang Bin, Body and Posture: Transmedia performance of Dance Tang Palace Banquet, *Journal of Beijing Dance Academy*(2022)13–19.