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Semi-Artificial Intelligence Approach to Resurrect “Wumesiben Mama” --the Manchu Epic

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Abstract

The book on Manchu culture, "Wumesiben Mama" is the first collection of China's intangible cultural heritage. Although the book contains a great deal of textual information about how ancient Manchus may have lived, it is severely lacking in visual illustrations. Rapid progress in the field of artificial intelligence enables natural language-based visualization. However, artificial intelligence alone may not be adequate because it can generate inaccurate visual outputs. The key to generating a more accurate result may lie in the involvement of human specialists in the field. This study had the following objectives: 1) to analyze the textual data of the epic; 2) to use artificial intelligence to initially create visual images, then apply expert opinions and the artist's skill to arrive at the most accurate representations of the epic, and 3) to evaluate the epic for visual accuracy and audience satisfaction. The researchers obtained textual information by analyzing Fu Yuguang's epic book. MidJourney, an artificial intelligence text-to-image platform, was utilized to generate three variations of the same scene. Five experts, including a Manchu historian, a costume expert, the director of the comic art committee, an expert on ancient folklore, and a Manchu inheritor, were consulted for their opinions on each iteration of the artworks. The final depictions of the epic, consisting of sixteen visual panels, were recreated with the aid of expert opinions. On May 12, 2023, the artworks were exhibited at the Fushun Museum. From a total of 346 audience satisfaction questionnaires, 256 (75%) were satisfied with the exhibition, 83 (24%) were neutral, and only two (1%) were dissatisfied. Experts who viewed the concluding exhibition concur that this technique can produce a historically accurate and aesthetically appealing depiction of the epic. This Semi-Artificial Intelligence method has numerous applications and should be investigated further.

Keywords : Manchu epic, Visual representation, Artificial intelligence, Human expert opinion

1. Introduction

The epic "Wumesiben Mama," which tells the tale of a female heroine who united the Manchu people, was renowned among the Donghai Nuzhen, or the ancestors of modern-day Manchu who lived in the northeastern part of ancient China. This epic originated during the Jin and Yuan dynasties (1115—1271 AD) and was widely disseminated in the region of Sikhote-Alin, a mountain range in Primorsky and Khabarovsk Krais, Russia (Heritage Centre, n.d.). By the end of the twentieth century, Manchu's traditional customs and cultures had rapidly declined, and the Manchu oral ballad was on the verge of extinction due to the passing of its inheritors (Lichun, 2011). Fortunately, a scholar named Mr. Fu Yuguang was able to recover Wumesiben Mama's oral ballads and bring worldwide notice to this literature through decades of compilation and turning them into a book (Shuyun, 2013). The book is considered an encyclopedia of North China's ethnic minorities due to its academic worth in the areas of epic, history, religion, mythology, art, folklore, and semiotics (Chunfeng, 2016). In May 2006, it was approved by the State Council as the first batch of the National Intangible Cultural Heritage (Council, 2006).

The book contains a plethora of textual information describing the story of the hero. This provides information about ancient Manchu lifestyles and attire. The book solely contained textual data, therefore no one knew the heroine's appearance or ancient Manchus'. Since the book's release, several artists have created printmaking, sculpture, paper cutting, and computer graphics (Yuguang, 2017). Visual images of the epic have not been generally appreciated as accurate (Hehong, 2019).

Recent advances in artificial intelligence have enabled natural language visualization (Qiang, 2021). Artificial intelligence alone may not be enough to accurately recreate this ancient epic. Expert intervention may solve the problem.

2. Research Objectives

2.1 to analyze the textual data of "Wumesiben Mama", the epic book by Fu Yuguang, and synthesize it as natural language descriptions to be used with artificial intelligence;

2.2 to use artificial intelligence to initially create visual images, then apply expert opinions and the artist's skill to arrive at the most accurate representations of the epic; and

2.3 to evaluate the epic for visual accuracy and audience satisfaction.

3. Materials and Methods

3.1 Literature Review

Original epic works, epic research monographs, and papers were initially studied and analyzed. To gain in-depth knowledge about the ancient Manchus, historical records, geographical data, folklore, Manchu shaman culture, Manchu folk art, Manchu dance, Manchu costumes, and rock paintings were studied. Semiotics and narratology theories were explored to conceptualize the epic visually.

3.2 Field Research

Six cities in 2 provinces of the Manchu culture were investigated including museums and ruins.

3.3 Questionnaire

Through volunteer sampling, a total of 346 questionnaires on Manchu culture were collected on May 20, 2023.

3.4 Artwork Creation

The results from the questionnaire, combined with the analysis of the epic text, were synthesized and fed to artificial intelligence to create a series of artworks. Five human experts were invited to verify the accuracy of the visual interpretations. The final artworks were then created by the researchers according to the verified data. A set of 16 illustrations depicting the entire epic was created for public viewing.

3.5 Expert Interview

This research utilized the interviewing methodology as a means of collecting valuable information about the cultural aspects of the Manchu community. A purposive sampling technique was employed to pick a total of five experts who were relevant to the research issue. The panel of experts comprised Professor Guo Shuyun from Dalian University for Nationalities in China, specializing in Manchu epic literature; Mr. Wang Honggang from Shanghai Academy of Social Sciences, specializing in Manchu folklore;

Professor Man Yi from Luxun Academy of Fine Arts, specializing in Manchu costume studies; Professor Li Chen, an expert in comic studies; and Professor Zhao Dongsheng, an esteemed inheritor of Manchu culture. The interview was arranged in a semi-structured manner to gather qualitative data on the Manchu culture that was not easily accessible through other literary sources.

3.6 The Artwork Exhibition and Assessment

During the period from May 12 to 19, 2023, 360 people visited the exhibition at the Fushun Museum, Fushun City, Liaoning Province. The researcher assessed the exhibition via a questionnaire and an expert critique.

4. Research Results

4.1 The Textual Data of the Epic

We analyzed the original work of the Manchu epic "Wumesiben Mama" and related papers. The study reveals that the inheritance of epic is comprised of four stages; pictorial symbols, speaking and singing, text compilation, and multiple media interpretations such as fine art, music, dance, and mobile applications, which are depicted in Figure 1 below (Likun, 2019).

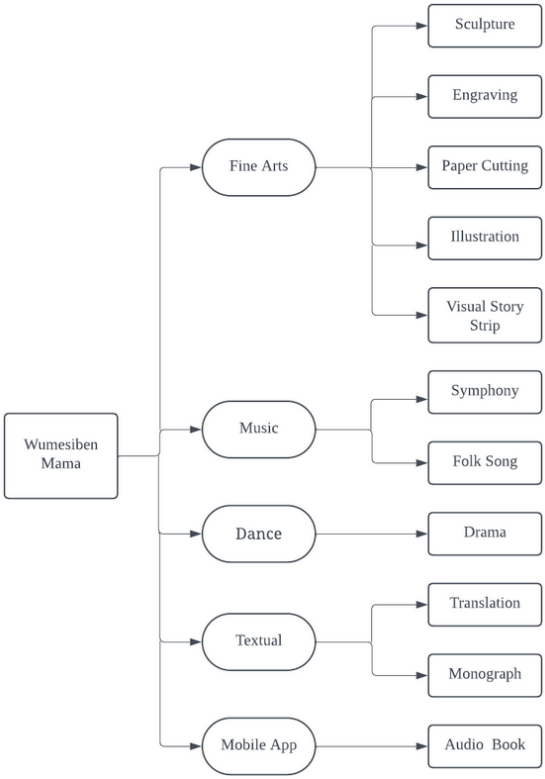


Figure 1: Multiple Media Interpretations of "Wumesiben Mama". Source: (Likun, 2019) illustrated by the author.

Textual analysis revealed that the epic contains detailed narrative words, which make up for the lack of images in historical documents and lay the textual foundation for visual creation. Textual data on characters and costumes within were extracted and categorized.

Here are the narrative descriptions of the protagonist at various stages of her life. She was a tranquil, smiling infant who slept in a raccoon's nest. In her youth, she had a gorgeous face, thin body, long hair, and long eyelashes. Her adolescence defined her thin, lovely form. During her adulthood and middle age, she was only described as a powerful woman wearing 100-kilogram armor. In her elder years, she had white hair and wrinkles around her eyes and forehead (Liankun, 2007).

Since the heroine is the direct ancestor of present Manchus, the researcher used their physical female features to shape her face. As illustrated in Table 1, historical pictures demonstrate three prevalent female Manchu facial structures: round, egg-like oval, and rectangular (House, 2001).

Table 1 Possible Facial Structures of Wumesiben

Round shape	Egg-like oval shape	Rectangular shape
		

Note. Old photographs of upper-class female Manchus taken between 1870-1909 AD. (House, 2001).

Clothing and garments are particularly unique to this epic, so the focus was on analyzing clothing materials, production processes, and color. During the course of the epic, the heroine was represented wearing five different clothing styles (Hu, 2019), described as follows:

The shaman suit: "She wears the skin of a white mouse, the skin of a gray mouse, the skin of a silver fox, the skin of a black otter, colored stones, bird bones, fish bones, roe teeth, leopard tails, and bear claws.

The sea divine suit: "The sacrificial clothing made of tiger, leopard, eagle, whale, roe, wolf, and python skin, decorated with 100 silver bells producing sound whenever moved, 100 sea fish teeth, 100 sea bear skins, inlaid with 100 whale eyes, and 100 colored swallow fur".

The dance costume: "She wears a shawl of oriental pearl, a cloak carved with silver, a long white velvet skirt, golden sleeves of flying squirrel skin, a waist woven with golden pheasant velvet, and leather embroidery on the backs of whales, sharks, tigers, bears, leopards, badgers, wolves, and raccoons.

The sea voyage dress: "The costume is said to be comprised of a cape decorated

with 999 pearls, colored stones, and nine colored seashells, all from the Donghai area. The elements were woven as one by fish whiskers in the shapes of clouds and stars. The embroidered hat was made of anemones and lotus leaves sewn on the skin of ten thousand-year-old turtles. Atop the hat stands a wing-spreading golden eagle."

The funeral suit: "Wumesiben sang and danced while wearing a cape made of white swan feathers over her shoulder, a silver saint helmet woven with sea fish bones on her head, a silver shelter woven with whalebone pieces on her body, short boots made of carved whale bones, and black socks on her feet."

The story of the epic, as compiled by Mr. Fu Yuguang (Liankun, 2007), can be divided into sixteen crucial sequences, beginning with her birth and ending with her death.

1. The goddess of the Donghai transformed Wumesiben into a golden egg held by an oriole, and two golden eagle guards flew and deposited the golden egg toward the Ubuson Tribe.

2. The golden egg shattered with a loud commotion, and a baby girl donning a beaver-skin vest slept peacefully in a raccoon's nest. As a deity, she was venerated by the Ubuson.

3. At age three, the heavenly girl captured crabs from the sea; at age seven, she fought sharks and forked out sea cucumbers; and at age nine, she was able to secure beavers with her bare hands. Her people praised the young girl for her diligence, intelligence, and beauty. She was known as Wumesiben, the person with the most intelligence, capability, and skill.

4. In her twenties, Wumesiben rose to prominence as the tribe's most powerful shaman.

5. Wumesiben trained hundreds of eagles, black bears, and beavers in covert to defeat the tyrannical foe and eliminate the intruders.

6. The enemy established on the steep cliff to plunder the Donghai Region's passing fishing vessels. Wumesiben conducted a comprehensive survey of the terrain and devised an ingenious strategy. She used a fire attack to destroy the enemy's camp, safeguarding the safety of her tribe.

7. Wumesiben used dance moves to defeat the Sirens, an invading tribe that was also proficient in a war dance. Her victory spreads her fame throughout the world.

8. Wumesiben earned the respect and affection of the clansmen and was subsequently elected chief of the Ubuson Tribe.

9. Wumesiben decided to search out the Sun in order to preserve light and warmth for her people. Before the voyage in search of the sun, she leads her people to the water's edge for a grand ceremony of sea worship.

10. Ten days after the sea worship ceremony, Wumesiben led fifteen raft canoes out to sea to seek the Sun.

11. Wumesiben led the fleet in a quest for the Sun, but they were met with thunder, lightning, strong winds, and angry waves. It was not a successful voyage.

12. On a voyage to the east, she encountered a volcanic upheaval at sea while commanding the fleet. Another voyage ended in failure as the fleet became trapped in the fog and fell into peril.

13. Wumesiben Mama embarked on a total of five Sun-seeking voyages, which passed through a number of regions, including Kuwu, Tatar, and the islands off the east coast of Kamchatka. One expedition traveled so far that polar bears on the ice could be observed.

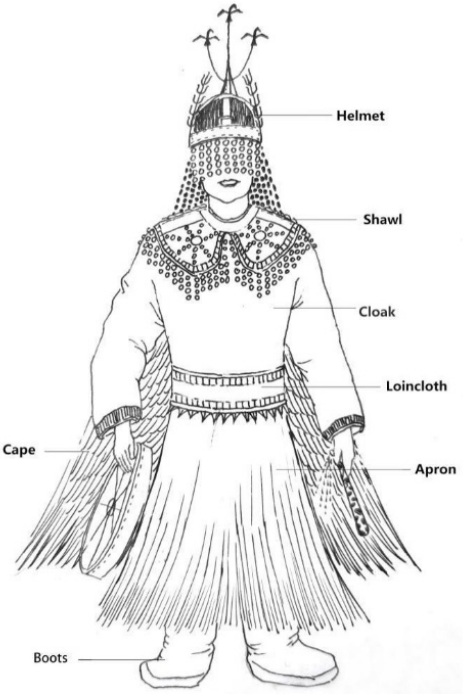
14. After the fifth voyage, Wumesiben became unwell and eventually died.

15. Tribes of the Donghai Area congregated at the beach to honor Wumesiben Mama's spirit and bury her at sea.

16. After Wumesiben Mama's death, her apprentices engraved her narrative with pictographic symbols in a cave to immortalize her great accomplishments.

4.2 Visual Data from Field Investigations

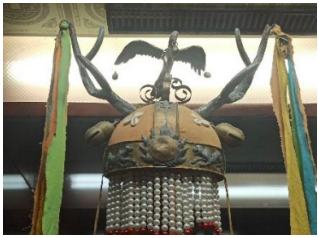
Figure 2 A Diagram of Manchu Shaman's Clothing Elements



Note. Analyzed and drawn by the authors.

Helmet, shawl, cloak, loincloth, apron, cape, and boots are the components of the Manchu shaman's attire, as illustrated in Figure 2 and described in Table 2.

Table 2 The Clothing Elements of a Manchu Shaman

Clothing Element	Visual representation	Description
Helmet	 *Source: Jilin Manchu Museum. Photographed by the authors on October 31, 2020.*	A helmet symbolizes shaman levels and skills. Three to nine horns are added as the level rises. The helm has additional horns on ancient shamans. The bird on the cap represents the shaman's ability to fly and converse with God. Shells, pearls, metal, and linen are used to make helmets. Common motifs are birds, frogs, and suns. Red, white, blue, yellow, and other bright helmets exist (Lindgren, 1935).
Shawl	 *Source: Jilin Manchu Museum. Photographed by the authors on October 31, 2020.*	A shaman's shawl communicates with the gods and deters demons. Additionally, it shows clan wealth. Shawls are fashioned of pearls, animal bones, and shells, which are the strongest, richest, and most precious materials. These components were weaved into beautiful figures, clouds, and abstract designs. Common pigments are red, blue, and white (Man, 2013).
Cloak	 *Source: Yu Guang, "Shaman Art", Xueyuan Press, 2009, p.11. 4.*	The shaman cloak is the main covering that protects the body. Fish, animal, shell, and metal make up most of it. The shaman decorates the garments with colorful animal and plant motifs like willow leaves, snakes, and frogs for protection (Yuguang, 2010).

Clothing Element	Visual representation	Description
Loincloth	 *Source: Manchu Museum. Photographed by the authors on April 5, 2021.*	A loincloth is wrapped around the abdomen to suspend percussion instruments, tapered tubes of rolled metal that generate noises while the shaman dances. Leopard tails, bear paw loincloths, and lynx tails can be used to make loincloth (Yang, 2013).
Apron	 *Source: Yu Guang, "The Art of Shamanism", Xueyuan Press, 2009, p. 8.*	An apron covers reproductive organs and is constructed of bone, stone, cloth, and animal hair in shamanistic motifs like flowers and abstract patterns. Shamans' noble rank is reflected in their yellow, green, red, and white hues (Minjie, 2008).
Cape	 *Source: Palace Museum, Beijing, China, Photographed by the authors on May 13, 2021.*	A cape is collarless, hoodless, sleeveless, and has a back slit to cover the full body. To defend against cold weather and winds. The "straw woven cloak", "belt woven cloak", "velvet woven cloak" and "silver eagle cloak" are made using different materials and weaving processes (Jinxia, 2014).

Clothing Element	Visual representation	Description
Boots	 *Source: Xuebin, "The Hunting Life of the Oroqen People", Heilongjiang Fine Arts Publishing House, 2003, p.88.*	Fish skin and later wild boar or cowhide were used to make shaman footwear. The shoes are warm and durable. Frogs and snakes are sewed on shoes and bells are tied on toes (Xuebin, 2003).

Note. Data was collected through literature reviews and field investigations by the author.

4.3 Analyzing Past Works by Other Artists

By investigating previous works done by other artists on the visual representation of the epic heroine, artworks are often created using the artists' subjective imagination. During an interview, Professor Man Yi (personal communication, November 7, 2020) from Lu Xun Academy of Fine Arts, who is an expert in Manchu costumes, stated that most depictions of the heroine are inaccurate and unscientific in terms of academic research methods. We hypothesized that with accurate textual descriptions, artificial intelligence could be used to create more historically accurate visual representations.

4.4 Artificial Intelligence

Artificial intelligence originated in 1950s. Artificial intelligence is cutting-edge technology. It explores human-like machines that think, feel, and behave (Mondal, 2020). Scientists are using machine learning to educate AI to find deep hidden patterns in data sets or correlate data qualities with replies or outputs. Neuroscience-inspired connectionism is the most successful machine learning method. It develops inverse propagated neural network algorithms for image and speech recognition and search result selection by studying how neurons encode knowledge by strengthening connections. User examples of "correct" input and output teach it. A neural network sends an image

through layers of artificial neurons to produce a final output, which is compared to the training data output. This continues until the algorithm can predict output using inductive logic. AI can help with problem-solving, language acquisition, scientific forecasting, and military tasks (De Spiegeleire et al., 2017).

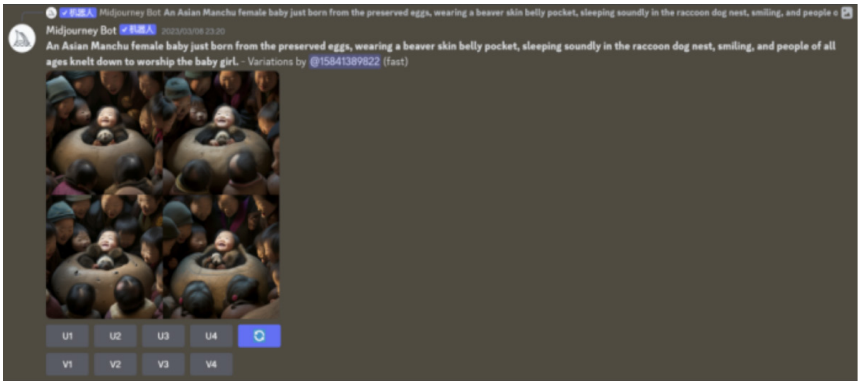
Artificial intelligence in art has expanded rapidly in the past decade (Antebi, L. 2021), but it is still developing. To handle it, we studied its strengths and shortcomings. AI can produce unparalleled samples, some of which can inspire key human endeavors by delivering new ideas and art that humans cannot create (Cheng, 2022). It can easily complete complex jobs compared to humans (Yiheng, 2020). However, technology is flawed. Artificial intelligence needs human desire to make art. Since humans gave artificial intelligence its initial data, its art comes from so many sources that it develops a new visual representation (Tao, 2022). Humans cannot control AI creation (Chatterjee, 2022). AI outputs may contain copyright-infringing materials, depending on training. AI-generated art can also create lifelike images or videos, casting doubt on reality. Its widespread accessibility may be a benefit or a drawback. (Mikalonyte & Kneer, 2021).

4.5 The Artificial Intelligence Process

For these reasons, artificial intelligence was used for its strengths while expert inputs strengthened its weaknesses. Only confirmed text was provided to AI during creation. The results were always verified by experts. We utilized Photoshop and a digital pen tablet to recreate the epic from expert-verified AI imagery.

The main tool was "MidJourney", a text-to-image artificial intelligence platform that accepts natural language sentences as input and generates corresponding images (Hanna, 2023). The selection of MidJourney as the artificial intelligence creative tool was based on its widespread user uptake and ongoing enhancements. According to Dawood (2023), the membership of Midjourney had a significant increase, growing from 2.7 million individuals in September 2022 to over 15 million individuals by May 2022. Furthermore, according to Cai (2023), MidJourney has achieved a notable ranking of 85th among the top private cloud computing companies globally. This recognition positions MidJourney as a viable solution for research purposes. The followings are the process the researcher used the program to generate visual representations of the epic (Figure 3).

Figure 3 Verified Textual Information Being Entered into the MidJourney Platform



Note. MidJourney is a subscription-based text-to-image AI. Source: https://www.midjourney.com

We used this method to create choices for the heroine character of varied ages, the costumes as described in the epic, and sixteen key scenes portraying the entire story. Table 3 shows the results of Wumesiben, the heroine in different stages of her life.

Table 3 Wumesiben, the Heroine in Different Stages of Her Life as Generated by MidJourney through Inputting Textual Descriptions

Textual descriptions	**Visual representations**
Infancy: She was described as a smiling infant with a serene and sweet visage who slept peacefully in a raccoon's nest while smiling.	
Youth: It was said that during her youth, she had a beautiful face, a thin physique, long hair, and long eyelashes.	

Textual descriptions	Visual representations
Adolescence: In her adolescence, she was described as having a slim, attractive body.	
Adulthood: During her maturity, she was only described as wearing 100-kilogram armor, indicating that she was a very powerful woman.	
Middle age: During her middle age, she was only described by the fact that she wore 100-kilogram armor, indicating that she was a very powerful woman.	
Old age: She was characterized as having some white hair and wrinkles around her eyes and forehead in her older year.	

Note. The researchers arrived at the textual descriptions of Wumesiben, the heroine of the epic, by analyzing the original book. The visual explorations were generated using MidJourney.

For shaman clothings, we used the same process of visual explorations. Table 4 contains the results from the artificial intelligence.

Table 4 Manchu Shaman Clothings Generated by MidJourney through Inputting Textual Descriptions

Textual descriptions	Visual representations
The shaman's costume A fine original shamanic costume made from white rat, squirrel, silver fox, and black otter skins.	
Helmet An exquisite Manchu shaman helmet made of colored stones, bird bones, fish bones, shark teeth, leopard tail and bear claw.	
Apron An exquisitely beautiful Manchu shaman apron woven from leopard skin and pheasant feathers.	
Boots A pair of original Manchu shamanic boots made of badger, wolf, and black bear skins and fur.	
Cloak An elaborate Manchu shaman cloak is woven from pearls, colored gemstones, and animal bones.	

Note. The researchers arrived at the textual descriptions of shaman clothing by analyzing the original book, field investigations, and expert consultations. The visual explorations were generated using MidJourney.

4.6 Expert Intervention

Based on advice from experts, we were able to choose historically accurate visual representations of the epic and recreate sixteen illustrations in PhotoShop. Table 5 depicts each scene in textual and visual forms.

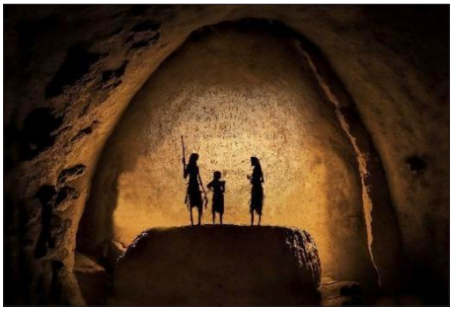
Table 5 Sixteen Illustrations Depicting the Visual Narration of the Manchu Epic

Textual descriptions	Visual representations
1. The goddess of the Donghai transformed Wumesiben into a golden egg held by an oriole, and two golden eagle guards flew and deposited the golden egg toward the Ubuson Tribe.	
2. The golden egg shattered with a loud commotion, and a baby girl donning a beaver-skin vest slept peacefully in a raccoon's nest. As a deity, she was venerated by the Ubuson.	
3. At age three, the heavenly girl captured crabs from the sea; at age seven, she fought sharks and forked out sea cucumbers; and at age nine, she was able to secure beavers with her bare hands. Her people praised the young girl for her diligence, intelligence, and beauty. She was known as Wumesiben, the person with the most intelligence, capability, and skill.	

Textual descriptions	Visual representations
4. In her twenties, Wumesiben rose to prominence as the tribe's most powerful shaman.	
5. Wumesiben trained hundreds of eagles, black bears, and beavers in covert to defeat the tyrannical foe and eliminate the intruders.	
6. The enemy established on the steep cliff to plunder the Donghai Region's passing fishing vessels. Wumesiben conducted a comprehensive survey of the terrain and devised an ingenious strategy. She used a fire attack to destroy the enemy's camp, safeguarding the safety of her tribe.	
7. Wumesiben used dance moves to defeat the Sirens, an invading tribe that was also proficient in a war dance. Her victory spreads her fame throughout the world.	

Textual descriptions	Visual representations
8. Wumesiben earned the respect and affection of the clansmen and was subsequently elected chief of the Ubuson Tribe.	
9. Wumesiben decided to search out the Sun in order to preserve light and warmth for her people. Before the voyage in search of the sun, she leads her people to the water's edge for a grand ceremony of sea worship.	
10. Ten days after the sea worship ceremony, Wumesiben led fifteen raft canoes out to sea to seek the Sun.	
11. Wumesiben led the fleet in a quest for the Sun, but they were met with thunder, lightning, strong winds, and angry waves. It was not a successful voyage.	

Textual descriptions	Visual representations
12. On a voyage to the east, she encountered a volcanic upheaval at sea while commanding the fleet. Another voyage ended in failure as the fleet became trapped in the fog and fell into peril.	
13. Wumesiben Mama embarked on a total of five Sun-seeking voyages, which passed through a number of regions, including Kuwu, Tatar, and the islands off the east coast of Kamchatka. One expedition traveled so far that polar bears on the ice could be observed.	
14. After the fifth voyage, Wumesiben became unwell and eventually died.	
15. Tribes of the Donghai Area congregated at the beach to honor Wumesiben Mama's spirit and bury her at sea.	

Textual descriptions	Visual representations
16. After Wumesiben Mama's death, her apprentices engraved her narrative with pictographic symbols in a cave to immortalize her great accomplishments.	

Note. The researchers arrived at the textual descriptions of each scene by analyzing the original book, field investigations, and expert consultations. The visual explorations were generated using MidJourney.

Five aforementioned experts were consulted for their opinions regarding the visualization of the epic from May 12 to 19, 2023. Their comments regarding the project are listed in Table 6.

Table 6 Experts and Their Opinions on the Artworks

Expert	Pros	Cons
Professor Guo Shuyun 	The researcher is the first individual to express the ancient Manchu epic "Wumesiben Mama" using artificial intelligence and digital media art. The work embodies the essence of the epic text in its entirety.	Images, movements, and facial expressions of the characters in the works of the researchers should convey symbolic meanings. For instance, the Wumesiben Mama in Table 5 Row 3 is overly simplistic and does not appear to convey any particular meaning.
Mr. Wang Honggang 	The scenes in the works include the sea, volcanoes, valleys, beaches, and caves are very realistic and specific.	The seasons, climates, and time reflected in the scenes in Table 6 are not accurate enough. Clouds, light, plants, animals, clothes, and waves in the scenes can be even more specific. Further research into these details is recommended (refers to Table 5 Row 8).

Expert	Pros	Cons
Professor Man Yi 	The researchers successfully used artificial intelligence to study the important costumes in the Manchu epic.	Some of the costumes in the researchers' works are too modern and do not reflect the simplicity of the costumes of that era (refer to Table 5 Row 4).
Professor Li Chen 	The visual narrative illustrations created by the researchers are concise, vivid, and beautiful, with simple and easy-to-understand stories, rich information, and a unique style. The new method of using artificial intelligence to intervene in the creation of comics is particularly innovative.	The composition of the work created by the researchers is not consistent, and visual balance should have been taken into consideration (refers to Table 5 Row 5).
Professor Zhao Dongsheng 	This is a scientific and efficient method for researchers to use modern artificial intelligence and scientific and technological tools to aid in the construction of ancient Manchu epics. Inheritance necessitates innovation and must progress with the times.	The Manchu's depicted characteristics are not historically accurate. Additional alterations should be made (refers to Table 5 Row 3).

Note. Personal communications between the researchers and the experts were conducted from May 12 to 19, 2023.

As shown in Table 7, all five experts agreed that utilizing artificial intelligence to visualize the Manchu epic is an innovative strategy that is also very effective. However, there were many who argued that there was room for improvement in terms of accuracy and that one need not exclusively rely on what the machine produced. In addition, one expert mentioned that each scene had to have its unique symbolic meaning that was connected to the narrative.

Figure 4 Original MidJourney Generated Artworks

Figure 5 The Revised Artworks Based on Experts' Suggestions

Figure 6 The Final Visual Representations of the Manchu Epic with Black and White Woodcut Effect

Note. Revised based on experts' suggestions.

After receiving essential feedback, the researcher proceeded to improve the artwork, assuring the preservation of stylistic consistency throughout the entire series. A comparative analysis may be conducted between the visual representations produced by MidJourney (Figure 4), the modified version influenced by expert evaluations (Figure 4), and the final results depicted in Figure 5, which exhibit a unique black-and-white woodcut aesthetic.

4.7 The Exhibition

The revised visual illustrations were put into a long scroll format artwork (Figure 6) and were exhibited at the Fushun Museum in Fushun, Liaoning province on May 12, 2023.

Figure 7 The Visual Exhibition of Wumesiben Mama, the Manchu Epic

Note. The measurements of each artwork are 70 cm in width and 47 cm in height. The artworks were produced using a high-quality digital printing method. The works were exhibited in Fushun Museum, Liaoning Province, China. On May 12, 2023.

The lighting in the exhibition space was purposefully kept low to create the impression that visitors were walking through a cave when they found the epic for the first time. Participants were provided with torches so that they could see the lengthy scroll of visual images (Figure 7).

Figure 8 The Visual Exhibition of Wumesiben Mama, the Manchu Epic

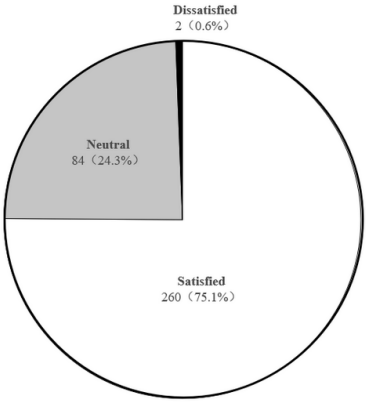
Note. The exhibition was held from May 12 to 19, 2023 in Fushun Museum, Liaoning Province, China.

In this phase, data collecting was carried out using a volunteer sampling methodology, where individuals who visited the exhibition actively participated in the data collection process. Among the visitors surveyed, 62.35% were female; 66.88% were aged 36—59; 55.88% had undergraduate degrees; and 74.41% liked Manchu culture. 73.53% of the subjects know about the Manchu culture, but only 28.78% know the Manchu epic "Wumesiben Mama". The visual storytelling strips accounted for 75.14% of the

people who liked the Manchu epic "Wumesiben Mama," and 75.22% of the respondents believed that this semi-artificial intelligence method of reproducing the Manchu epic can be studied in depth and has broad development prospects.

Through volunteer sampling, there was a total of 360 participants. Shown in Figure 8, the result from the audience satisfaction questionnaire reveals that only 346 entries were valid, 260 participants (75.1%) were satisfied with the visual style and narrative value of the exhibition, 84 participants (24.3%) felt neutral about it, and only 2 persons (0.6%) were dissatisfied.

Figure 9 Audience's Satisfaction with The Visual Exhibition of Wumesiben Mama



Note. 346 entries were valid, 260 participants (75.1%) were satisfied, 84 participants (24.3%) felt neutral about it, and only 2 persons (0.6%) were dissatisfied. Data was collected on May 20, 2023.

The results from the questionnaire demonstrate that the audience's satisfaction with the Semi-Artificial intelligence approach to resurrecting the Manchu epic is high. The experts' positive opinions regarding the approach reaffirmed the validity of the method.

5. Discussion and Conclusion

5.1 The Quality of the Textual Information

For artificial intelligence to recognize human natural language and generate accurate images, the quality of text information plays a crucial role. To keep the data as accurate as possible, one must always adhere to the original work. However, the original text does not contain enough textual descriptions, so field investigations were required to acquire good text quality to pass on to the artificial intelligence text-to-image platform.

5.2 Issues Related to Artificial Intelligence in Creating Artwork.

By feeding valid textual descriptions to an Artificial intelligence text-to-image generator, visual representations can be created, allowing visual explorations to be conducted very quickly. However, the results could be historically inaccurate as per the limitations of the trained data set. While the generated images may be flawed, they can still be used as the basis for future enhancements and corrections. Without proper human curation, the images could be deemed fake and might cause harmful results if used inappropriately.

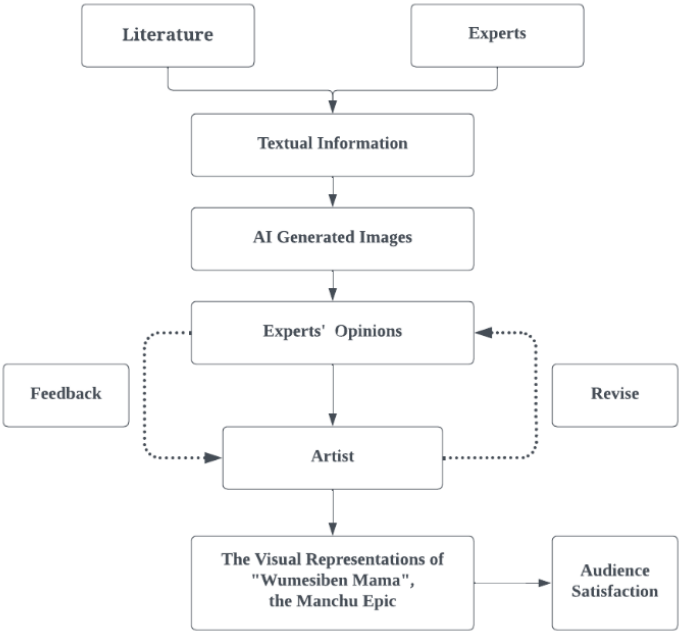
5.3 Values of Human Expert Opinions

The opinions of human experts were an important link in the research process. They provided help and suggestions for researchers in their respective professional fields, put forward many valuable opinions, and validated visual data. This allows the creations to stay on track and be historically accurate. In some instances, experts may not agree on the same issue, which may lead to a state of uncertainty. Thus, it is advisable to consult many experts in the field and draw conclusions based on a critical analysis of their opinions.

5.4 The Semi-Artificial Intelligence Art Creation Process

The process for creating accurate representations of the ancient Manchu epic with this method is outlined in Figure 8.

Figure 10 Semi Artificial Intelligence Art Creation Process



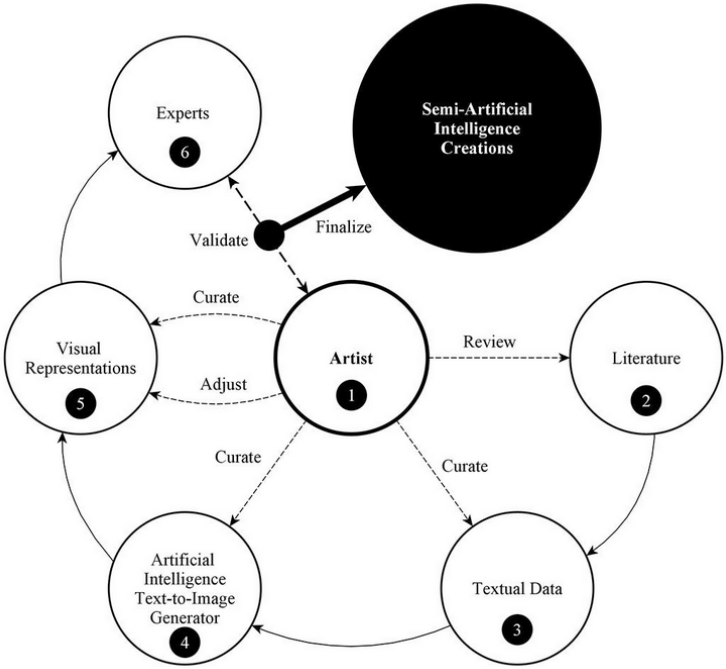
Note. By the researchers.

From the Manchu epic "Wumesiben Mama", we obtained the textual data of characters, costumes, and stories, which laid the foundation for the study of visual imagery. The natural language data was inputted into the artificial intelligence text-to-image generator, MidJourney, resulting in visual representations of the textual counterparts. Experts were invited to verify the historical accuracy of the images generated by artificial intelligence. Under the advice and guidance of experts, the researchers use Photoshop and digital drawing boards to correct the inaccurate parts of the images generated by AI.

5.5 The Semi-Artificial Intelligence Art Creation Model

The diagram in Figure 9 depicts a symbiosis artwork creation model between artificial intelligence technology and the insights of human experts to arrive at visually accurate representations of verified textual data.

Figure 11 The Semi-Artificial Intelligence Art Creation Model



Note. By the researchers.

This model can be applied to other areas of study across a wide range of fields and can provide fast and highly valid outcomes. The researchers recommend that for future studies, one can focus on the textual data assurances, which would yield even more accurate results.

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