

An era is dyed the color of its ideals. Color in art then becomes an era's voice, either to praise opulence, or to murmur softly in the background, encouraging the viewer to come closer. Unfortunately, fading colors and details muffle this voice, compelling the viewer to leave out details or to substitute others. A word here or there can be heard but, unless the art is restored, the voice is lost.

The colors in *emaki mono* – a narrative in the form of horizontal, illustrated scrolls created during the 11th and 16th centuries in Japan – speak softly to one another, their poetic exchanges meant to glorify but not overpower the illustration's detail. The surviving *emaki mono* are now weak with age, and the colors they once wore so proudly sag on the bones of diminishing details. Modern science can help to revive at least some of these details.

Emaki mono depict romance, battles, folk tales, religion and the supernatural with a corresponding ribbon of text, usually *waka* (literally *Japanese poem* in Japanese) on the side¹. *Waka* poetry is a genre of Japanese poetry written in variations of a 5-7-7-5 rhyme scheme that expounds on the sublime, intimate corners of emotions. On a concrete level, *waka* poetry pinpoints what scene the *emaki* was emphasizing. More tenderly, *waka* calls forth the scene's emotional significance to frame the viewer's perception.

While the characters' environments are highly detailed and filled with secret allusions in *emaki mono*, the characters themselves are ambiguous. Any facial expression is kept to a bare minimum, challenging the viewer to piece together the characters' perspectives through close inspection. The intentional ambiguity exists to give space to the characters, the illustrator, the original writer, and the viewer in considering their ideas of love, loneliness, and the inevitability of change.

One of the most famous *emaki mono*'s is *Genji Monogatari emaki* dating from about 1130ⁱⁱ. This *emaki* illustrates Murasaki Shikibu's epic *The Tale of Genji*, written about the year 1000. This novel observes the romantic relationships Genji, an irresistibly handsome aristocrat, forms and maintains with the women he encounters. The text is rich with Buddhist themes, portraying suffering as the inevitable state of life. The pain of attachment and loss prompts Genji to love life for its delicacy, reshaping the tale as a love story in a spiritual, not necessarily romantic way. While only 15% of the original scrolls remainⁱⁱⁱ, the fragments are held as national treasures in the Tokugawa Art Museum in Japan.

Over time, like all *emaki*, the colorful brilliance of these scrolls has faded. Their beauty hasn't diminished (it's artistic irony that their watercolor-like appearance adds to the Buddhist idea of transitory existence) despite the weak details. *The Tale of Genji* was written primarily for court women but, while the scrolls may have not been made only for them, considering their opulence they were clearly reserved for the wealthy. Knowing from prior research that more expensive paints in the Heian era had certain chemical properties, studying the *emaki*'s pigments would allow one to see the monetary value placed in the scrolls. More lush, expensive pigments would suggest that the Heian era considered art forms, especially "The Tale of Genji" particularly important. "The Tale of Genji" is considered a cornerstone of Japanese literature, and all writers who came after Shikibu tried to live up to her reputation. Because the Japanese concept of love derives greatly from this tale, the faded detail and color frustrates attempts to understand what place love had in the Heian moral hierarchy.

From 1949 to 1953 the predecessor of the Tokyo National Research Institute of Cultural Properties systematically examined the scrolls using optical methods^{iv}. By inspecting enlarged photographs and by photographing the scrolls with infrared/ultraviolet light, researchers

attempted to detect glue and perhaps, any painting-over the original scrolls, or the peeling-off of paint to understand the pigment's chemical properties. X-ray radiography was also used to determine the pigments' thickness. At the time, these techniques provided the leading technology available; however, it wasn't possible to reach conclusions regarding what pigments were used. Later, due to its rapidity and non-destructiveness, X-ray fluorescence spectrometry (XRF) was used to measure the chemical composition in the scroll's remaining pigments. Considering the risks in moving the frail *emaki*, it wasn't practical to use the conventional XRF machine. Once a portable XRF was developed, it was brought into the museum to analyze the pigment's chemical properties.

Calibration is required to detect directly a pigment's elemental composition. Therefore, test pieces painted with varying thickness of the pigments were prepared on paper for X-ray studies^v. What the pigments absorbed was recorded on a photographic film that had been placed under the test pieces. Those pigments containing heavier compounds such as vermilion (mercury sulphide) or red lead (red lead oxide) absorbed the X-ray, while pigments consisting of lighter compounds (calcium carbonate, clay or carbon) transmitted X-rays. Since the paper was sensitive to the effects of the X-ray as well, it was possible to identify pigments by the degree of blackness of the film.

Amongst the discoveries, it was shown that white lead was used in the scrolls^{vi}. Because white lead was too precious, it was never found in large surface areas such as walls, doors and screens. This suggests the *Genji Monogatari emaki* were highly prized, indicating that the Heian era emphasized the importance of artistic expression, in particular, *The Tale of Genji*. *Genji Monogatari emaki* is considered one of the marvels of Japanese art. Like the character Genji himself, the *emaki* set a standard for what sentimental beauty should be. Thus, understanding

what colors were used and their intensity is closely linked to seeing what the artist considered important. Without X-ray radiography and chemical analysis, these colors would be unknown, and the artist's voice would be lost.

Remembering how each scene in *Genji Monogatari Emaki* illustrates a significant episode of the tale, it is helpful to note the implications of the word "important". The scenes in the *emaki* were those that patrons considered vital to the soul of Genji's tale. For instance, consider the *emaki* for Chapters 15, 16 and 50. *The emaki* for "Waste of Weeds" from Chapter 15 provides a glimpse as to how deeply Genji cared for the women in his life. In the scene Genji has recently returned from his self-imposed solitude in Suma and has gone to visit one of his lovers, Suetsumuhana, whom he devotedly wrote to while in exile. Her manor, now a waste of weeds, is a manifestation of her mental state that in the absence of Genji, withered from grief. "At The Pass" from Chapter 16 reminisces of love entrenched in karma (the total effect of a person's actions from a past life playing out in the present); "Eastern Cottage" from Chapter 50 exemplifies the need for stability. Understanding these scenes (amongst others) highlights what the Heian era considered important in human relationships. When the emphasis shifts to what the artist considered important (use of certain colors and how they present detail), all interpretation dwells in the microscopic; that can be tantalizing considering the enormity of possibilities. These possibilities become apparent only when one can admire the details and colors, an experience made possible by x-ray radiography and chemical analysis.

Another realm where the details and colors used in *emaki* are of great importance is in considering the different needs of Heian men and women. There were certain styles of painting that distinguished between *otoko-e* ("men's pictures") and *onna-e* ("women's pictures") styles of painting.^{vii} The subtle differences stem from the genders' different aesthetic preferences. Perhaps

what is more easily noticeable is the difference in subject matter. *Onna-e* illustrates court life – as epitomized by *The Tale of Genji* – specifically court ladies, in romantic situations. On the other hand, *Otoko-e* recorded historical events, emphasizing battle scenes. Some colors indicate a particular emotional effect. Therefore, seeing them in their original brilliance would make Heian society less distant and more tangible.

Although *Genji Monogatari emaki* are figuratively immortal, x-ray radiography and chemical analysis have given them physical form. Recovering the color and details of ancient scrolls to help us understand how a civilization saw life may not appear important. The Heian era grew, flourished, and diminished like all other eras. But it's intellectually valuable to see that the *emaki* aren't just art pieces: they're also living fragments of what was and evidence of what is. What the *emaki* are is overlapping of time frames: the concepts love, loyalty and dignity evolving from the past into the present. Only when we see where we once were can we begin to understand where we are today. According to *Genji Monogatari emaki*, humans are where they've always been: struggling inside themselves. Seeing how human emotions haven't changed much over time, *emaki* forges a closeness between people from different eras on a common ground. Without scientific analysis to restore the fading colors and details, this closeness would be barely tangible.

ⁱ Wikipedia. "Emakimono." Wikipedia, the free encyclopedia. 19 Oct. 2008. MediaWiki. 15 Oct. 2008 <<http://en.wikipedia.org/wiki/emakimono>>.

ⁱⁱ Wikipedia. "The Tale of Genji." Wikipedia, the free encyclopedia. 14 Oct. 2008. MediaWiki. 13 Oct. 2008 <http://en.wikipedia.org/wiki/the_tale_of_genji#illustrated_scroll>.

ⁱⁱⁱ Wikipedia. "Emakimono." Wikipedia, the free encyclopedia. 19 Oct. 2008. MediaWiki. 15 Oct. 2008 <<http://en.wikipedia.org/wiki/emakimono>>.

^{iv} Sugihara, Keiichi, Koichi Tamura, Masao Satoh, Yasuhiro Hayakawa, Yoshimitsu Hirao, Sadatoshi Miura, Hideki Yotsutsuji, and Yoshitaka Tokugawa. "ANALYSIS OF PIGMENTS USED IN SCROLL PAINTINGS OF A NATIONAL TREASURE "TALE OF GENJI" USING A PORTABLE X-RAY FLUORESCENCE

SPECTROMETER." JCPDS - International Centre for Diffraction Data 2001, Advances in X-ray Analysis
44 (2001): 432-41.

^v Yamasaki, Kazuo. "Technical Studies on the Pigments Used in the Ancient Paintings of Japan." (1954): 781-85.

^{vi} Yamasaki, Kazuo. "Technical Studies on the Pigments Used in the Ancient Paintings of Japan." (1954): 781-85.

^{vii} Wikipedia. "Emakimono." Wikipedia, the free encyclopedia. 19 Oct. 2008. MediaWiki. 15 Oct. 2008
<<http://en.wikipedia.org/wiki/emakimono>>.

Genji Monogatari Emaki

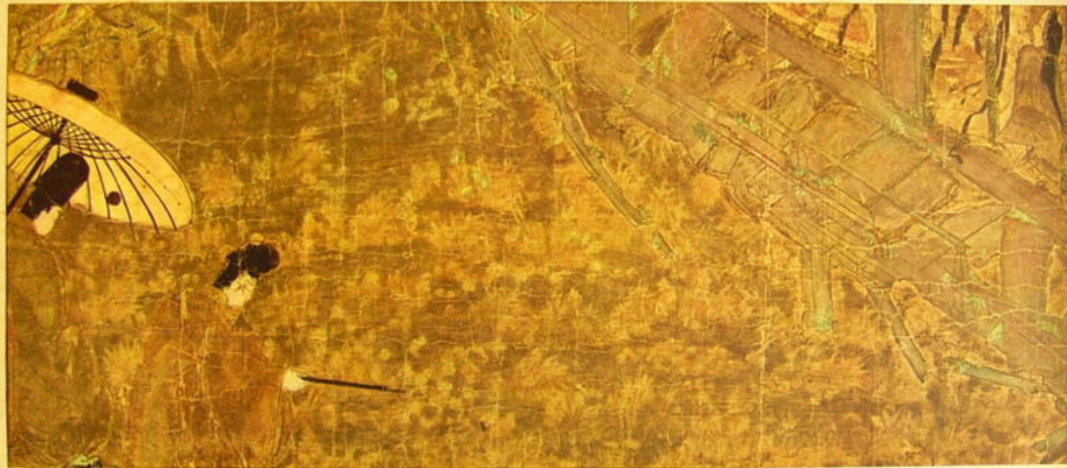


Illustration of Chapter 15ⁱ: *Yomogiu* ("Waste of Weeds").



Illustration of Chapter 16ⁱⁱ: *Sekiya* ("At The Pass").

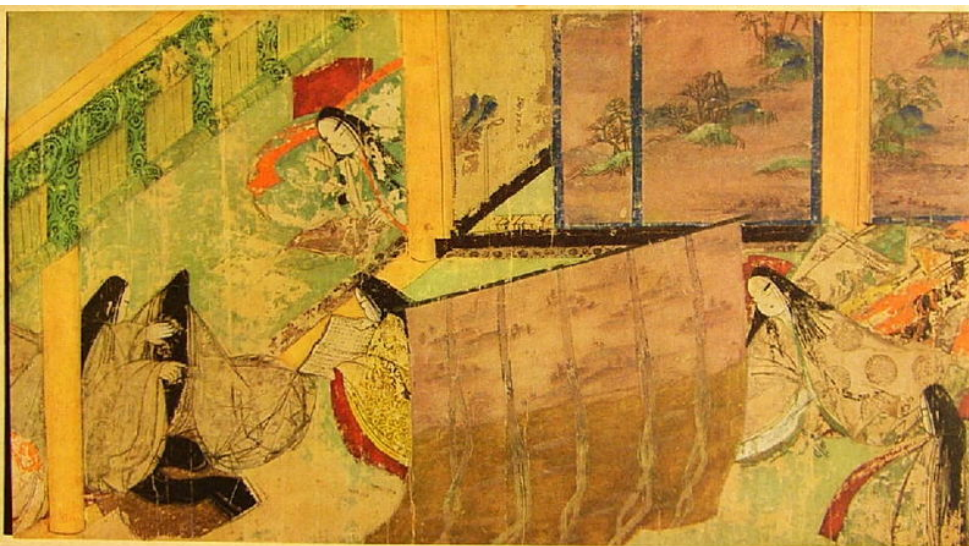


Illustration of Chapter 50ⁱⁱⁱ: *Azumaya* ("Eastern Cottage").

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- ⁱ Wikipedia. "The Tale of Genji." Wikipedia, the free encyclopedia. 14 Oct. 2008. MediaWiki. 13 Oct. 2008 <http://en.wikipedia.org/wiki/the_tale_of_genji#illustrated_scroll>.
- ⁱⁱ Wikipedia. "The Tale of Genji." Wikipedia, the free encyclopedia. 14 Oct. 2008. MediaWiki. 13 Oct. 2008 <http://en.wikipedia.org/wiki/the_tale_of_genji#illustrated_scroll>.
- ⁱⁱⁱ Wikipedia. "The Tale of Genji." Wikipedia, the free encyclopedia. 14 Oct. 2008. MediaWiki. 13 Oct. 2008 <http://en.wikipedia.org/wiki/the_tale_of_genji#illustrated_scroll>.