

## Streszczenie pracy doktorskiej w języku angielskim

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**Title:** An interdisciplinary investigation of the painting materials and technique of Singapore artist Liu Kang (1911–2004).

**Key words:** Liu Kang, painting supports, pigments, hidden paintings, pentimenti, double-sided paintings, Shanghai Art Academy, Nanyang style, IRFC, X-RAY, RTI, MA-XRF, PLM, SEM-EDS, FTIR

The aim of the doctoral thesis is to elucidate the painting materials and techniques of a renowned modern Singaporean artist Liu Kang (1911–2004). His painting practice which spans over seven decades was strongly influenced by Modernists' artworks and Chinese painting traditions. Liu Kang expressed these artistic inspirations during his studies in two major East and West art centres – Shanghai and Paris. Liu Kang gained art education at the Xinhua Art Academy in Shanghai (1926–1928) during the national art reformation movement, which aimed at the revival of Chinese painting practices by introducing artistic ideas from the School of Paris. He continued his artistic education at the Académie de la Grande Chaumière in Montparnasse (1929–1932). Liu Kang's stay in Paris initiated his fascination with the works of Matisse, Cézanne, Gauguin, and van Gogh, whose art he alluded to throughout his career. Liu Kang's early artistic achievements in Paris were publicly recognised in 1930 and 1931, when he exhibited at the Salon d'Automne.

One of Liu Kang's main artistic accomplishments was his contribution to the development of the Nanyang painting style in the 1950s. The Nanyang style is associated with paintings that express a consciousness of regional identity amongst the migrant Chinese painters in Singapore, stemming from an erosion of ties with China, especially after the start of communist rule in 1949. The painting style reflects an eclectic amalgamation of two artistic traditions, the School of Paris and Chinese ink painting, representing Southeast Asian subject matter. The additional aspect of the style is the batik-inspired stylistic innovation, which successfully accommodated Liu Kang's preference for the exposed colour of white ground. Besides having a vital role in developing the Nanyang style, Liu Kang repeatedly departed from his established artistic way to search for new sources of inspiration and to experiment with various forms of expression. These explorations triggered unconventional painting approaches, which accentuated some inconsistencies in the artist's oeuvre.

The literature relating to Liu Kang's oeuvre is limited and includes academic dissertations and studies about his professional activity in the context of other Singapore artists or the Nanyang style. Other sources comprise various exhibition catalogues, press releases, interviews and TV documentaries. Moreover, none of the authors have discussed the artist's painting techniques comprehensively or analysed the peculiarities of his working practice.

The main aim of the research comprised an overview of the artist's preferential painting supports and pigments and an outline of the evolution of his working methods throughout his career. Moreover, it was crucial to identify and categorise some intriguing technical features of his paintings, which define the less known and mysterious side of his oeuvre. Therefore, it was important to identify the types and methods of preparation of the painting supports, the structure and chemical composition of the ground and paint layers, as well as to determine the role of preparatory studies in the artist's creative process.

The research focused on 97 of Liu Kang's paintings from the National Gallery Singapore (NGS) and Liu family collections created on canvas and hardboard between 1927 and 1999. Research strategy prioritised non-invasive techniques. Their results guided further micro-invasive analytical techniques. The non-invasive techniques involved the photography of the paintings in visible light (VIS), ultraviolet fluorescence (UVF), reflected ultraviolet (UVR), near-infrared (NIR) and infrared false-colour (IRFC) imaging. Moreover, X-ray radiography (XRR) and reflectance transformation imaging (RTI) were conducted. Paint layers were analysed with a digital microscopy and X-ray fluorescence (XRF). The following step involved the extraction of 152 fibre samples from the textile supports and 448 ground- and paint-layer samples for detailed identification employing polarised microscopy (PLM) and field-emission scanning electron microscope with energy dispersive spectroscopy (FE-SEM-EDS), followed by attenuated total reflectance–Fourier transform infrared spectroscopy (ATR-FTIR). When necessary, the interpretation of the analytical data was cross-referenced with contemporary colourmen catalogues. The archival sources further expanded the knowledge of Liu Kang's painting practice, whereas his drawings and watercolours shed light on the development of the compositions from the initial concepts to the completed artworks. The thesis was conducted in a series of publications focusing on Liu Kang's major artistic phases and special artistic subjects as follows:

- Paris period (1929–1932),
- Shanghai period (1933–1937),
- period of emigration to Malaya and the quest of developing his own painting style (1937–1949),
- contribution to the Nanyang style (1950–1960),
- artistic subject of female nudes (1927–1954 and 1992–1999),
- artistic subject of Huangshan and Guilin mountains (1977–1996).

The intriguing technical features of Liu Kang's painting practice and conservation issues relating to them are presented in a dedicated research article. The final publication presents the research results, which characterises painting materials and techniques throughout Liu Kang's oeuvre.

The systematic multidisciplinary approach revealed a few key aspects of Liu Kang's painting practice. Commercially prepared linen canvases of varied densities with oil-based grounds were the artist's preferred painting supports. Commercially prepared cotton canvases were the norm during the Shanghai period. Absorbent and semi-absorbent grounds occurred only in paintings originating from Paris and Shanghai. Besides textile supports, the artist occasionally used unprimed hardboards resembling Masonite boards. Additionally, Liu Kang's frequent outdoor painting sessions in Paris and Shanghai led to the use of small-sized painting supports, but as his career progressed, he began to favour larger formats.

The palette of colours is economical, but it evolved over time. The artist relied on viridian, ultramarine, Prussian blue, Cr- and Cd-containing yellows, yellow and red Fe-containing earth pigments and organic reds. The artist introduced—very briefly—cobalt blue, cerulean blue, cobalt violet, manganese blue, phthalocyanine blue and green. However, their low usage suggests some hesitation in giving these pigments a more pronounced role in the painting process. Although lead white was continuously present in the mixtures with other pigments until the 1990s, it was superseded by titanium white in highlights. Hence, the role of titanium white in Liu Kang's paintings evolved from a possible commercial admixture characteristic of his early practice to the most frequently employed white pigment in the 1980s and consistently used thereafter. He withdrew cobalt yellow and emerald green in the 1950s.

According to the archival sources, the artist used oil paints from Royal Talens and Rowney, among other manufacturers, in the 1980s and 1990s. It can be inferred that he may have preferred bulk purchases of paint tubes to avoid interruption to the artistic process. In addition, it is conceivable that, during the painting sessions, the artist mixed the paints of different brands. Hence, the attribution of the identified pigment mixtures to the specific colourmen brand(s) should be made very carefully.

Small-scale sketching on paper with pencil, crayon, charcoal, pastel, pen and watercolour was an integral part of Liu Kang's development of the artistic ideas prior to painting. The comparative studies of these drawings with the final paintings revealed a distinctive conceptual work of the artist who attempted to design the most satisfactory compositions. Liu Kang's practice of making preparatory underdrawings on the painting supports remains relatively unknown. One reason could be that thickly applied paint effectively limits the visibility of the underdrawings in NIR. On the other hand, preliminary sketching studies enabled the artist to establish the composition on the painting support with effortless brushwork and skip the underdrawing stage.

The study revealed variations in his paint application techniques, from small dabs, short or long directional and parallel strokes that sometimes juxtaposed with the exposed ground, to fluid brushwork that evolved into broad application or pointillist finish, impasted wet-on-wet or wet-on-dry execution with both brushes and palette knives. Liu Kang expressed early interest in the optical effects achieved by exposing of the white ground. However, since the 1950s this

predilection has become a hallmark of his batik-inspired painting technique. Moreover, the study demonstrated that the artist occasionally departed from established

painting convention of the Nanyang style and explored different means of artistic expression, although he remained conservative in his choice of painting materials and avoided experimentation with new paint formulations.

Distinctive features of the artist's working practice are the retouchings, revisions and recycling of former compositions. Liu Kang habitually retouched the paint losses in his paintings; however, a worsening eye condition might have impacted the colour accuracy of these amendments. Minor and major revisions may indicate that, despite extensive drawing studies and photography preceding the painting, the artist's concept of the final composition evolved, and in some cases, changes were made in very distinct stages. Financial constraints, changes in availability of art materials, the poor condition of the paintings or a shift in Liu Kang's personal taste resulted in an unfinished state of artwork, or a rejection of the completed artwork, leading to their being recycled.

The interdisciplinary study of Liu Kang's painting practice allowed to identify and categorise some intriguing technical features of his paintings, which define the less known and mysterious side of his oeuvre. Thus, it was possible to diagnose the condition correctly and to conduct the conservation treatments of his artworks selected by the curators for the permanent display at the National Gallery Singapore.

Another accomplishment in research involves partially documenting the availability of painting supplies in three crucial locations where Liu Kang engaged in his artistic pursuits, namely Paris, Shanghai, and Singapore.

The obtained results may be of great value to conservators and art historians who further explore Liu Kang's painting materials and technique. In particular, the knowledge gained from this comprehensive research may be useful in the dating of undocumented paintings and authenticating works attributed to him. In addition, the presented information sets a foundation for future research focusing on the painting practices of other modern Singapore and Southeast Asian artists.