

Concluding Observations

This study involved the balancing of a combination of several research fields to create a new form. The various parts work together towards a better understanding of the substance of Chinese painting.

The stage is set in chapter one by describing the period, location and the most important subjects of the research. In chapter two I outlined the scenery of the period with the use of contemporary written sources. The words of Xie He, Yao Cui and Xiao Yi are incorporated to give the reader an impression of the texts on painting of that period. Their way of writing at first does not seem to contain much information about the material aspects of painting. However, they do refer to technique and style of the painters, and they also show us that the quality of painting was seen as an important issue.

We learn from them that some painters followed the methods of their masters; others worked in the style of their fathers, brothers or uncles. We read about different styles, schools and techniques, and from this we understand that there was a tradition of learning from ones masters, or from works of former masters. More importantly from time to time we do get information that can be seen as pointers towards strictly technical issues, as is argued by interpreting the *liufa* (六法) as a technical set of rules for painting.

To give some examples: in Yao Cui's text we read about Shen Biao, a student of Xie He who loved to use lead flower. We also read that Yao Cui admires the painter Jiao Baoyuan for his persistence in trying to discover the painting method that Zhang Sengyu and Xie He are unwilling to reveal to him.

Xiao Yi makes a distinction between warm and cold colours, and hints at what today is seen as colour perspective. Xiao Yi evidently did not keep his word when he said that these secrets 'may not be revealed in the living quarters', but nonetheless we would have appreciated it if he had given more practical information.

In chapter three I introduced some of the substances that can be used for painting. There are several texts that I have taken into consideration, such as the *Bencao kangmu* [Chinese *Material Medica*] and the farmers handbook (*Qimin yaoshu*) [Jia Sixie 1]. These books provided me with recipes for materials such as glue and various mineral and organic paints

and dyes. The combination of hard evidence from the analysis of samples and from these books gives us a new and exciting way in which to solve some of the problems of determining the nature of the materials involved. This study takes the first step, but this research needs to be continued and expanded. It is time consuming research, and a lot of analytical work is required to produce a larger database of materials. The analysis of traditional and modern vocabulary shows us some of the problems in using written texts without the additional use of chemical analysis.

Chapter four deals with the samples. Scientific evidence is given for the structure of the ground layers, and for several kinds of paint. Comparisons are drawn with descriptions in modern Chinese publications on the technique of painting that provide valuable information. Since the English summaries are usually concise, I feel that more of these publications must be translated in full, and made accessible and assessable for Western readers, leading to a better exchange of knowledge between specialists of China and the West. Combining the knowledge of restorers and curators of Asian Art should benefit both research and museum practice. Much more work still needs to be done in this field.

Chapter five contains the tables and reports with the results and conclusions of the scientific analysis. Some new questions arise from the analysis that are still open for further research. In this chapter the reader is provided with a step-by-step description of the methods used for analysis of the samples.

For this examination of Chinese paint I used microscopical examination, micro-chemical analysis and other scientific methods such as HPLC and SEM-EDX, methods that are available to us today to collect information about the paint and the layer structure of the paint and the ground. This approach has been used in Western art historical research for some time, and is mostly carried out for conservational purposes. In this study the quest goes further than the direct need for information of a restorer working on a particular piece of art, and enters the field of pure scientific knowledge, contributing to the general knowledge about and understanding of paint. In China, researchers and museum staff use this method, and also for conservational reasons. I have found that this practical knowledge, collected in the field, is of great importance in the understanding of the paint. With this project, a preliminary step has been taken from the more common impressionistic judgements on 'the painters practice' to

scientifically verifiable analysis. Furthermore, the collection and interpretation of data lead to a deeper understanding, which in turn will reflect back on the practice of conservation and restoration: the one cannot exist without the other.

I want therefore to extend this to the conclusion that the taking of samples is useful for the defining of painting techniques in general and especially for Chinese painting. Since the Chinese literary sources on painting technique are limited, samples can be a valuable extra source of information. This study has built up the first framework, on which further research can be constructed. The samples form a datable corpus of information and the results of analysis can be used as a touchstone for standard paint components in Tang dynastic China. As we see in the conclusions drawn in Chapters 4 and 5, in most cases the paint is a complex mixture of mineral and organic components. The ingredients of the paint work together to create something that has survived from the 8th century until the present day. For a better understanding of the development of paint composition since that period, more research is necessary. The improvement of scientific research methods for analysis of both in-organic and organic components of paint will also contribute to future research.

The use of lime in ground layers has frequently been assumed in publications about the Tang Murals. However, the scientific analysis of the layer structure contradicts this assumption and proves that not lime but chalk and kaolin were used for the ground layer of the murals in the three Tang tombs that I examined. This important fact contributes to a better understanding of the technical problems concerning the conservation and restoration of the murals. The paint and the method of painting can only be understood properly when all the different components are taken into account. The complexity of the matter requires an understanding both of the material and the general technical skill necessary to create a piece of work. As for the paint, the results again contradict the generally assumed use of unmixed single-mineral paint. In reality the use of pigment and vegetable dye is very complex, and mixtures of pigment and dye are commonly used in these works.

I believe that the combination of the glue in the paint layer and the dry wall chalk ground to be the main factor for the long survival of the Tang murals. The more we can discover about

the materials and technique employed, the better is their chance for a continued existence for future generations.

Proper interpretation of data from the analysis requires a reference collection of organic materials and minerals. During the research period I have built up a collection of Chinese materials: minerals; 'traditional' paint sold today; plants and fibres; shells and so forth. Future research must expand this reference collection and more material must be collected locally.

Collecting this kind of raw material and comparing this with samples of 'old paint' in a reference collection greatly contributes to the understanding of the technical aspects of Chinese paint. Specifically, a large number of organic components need to be examined further and must be analysed and compared with works of art from various periods.