Introduction

The aim of this paper is to discuss the relationship between the “ideal” and the “possible” in the field of scientific research applied to conservation of cultural heritage. The scientific research on works of art must be done very carefully. The non-destructive analysis methods are preferred to the destructive. First of all the question and the reason of this question must be clear. Then it is necessary to know that methods of analysis can give the expected response, which of these methods are available and which are possible to be applied to works of art. It is necessary to think also about whether the analysis will be done in situ or if the work must be transported. If with withdrawal of samples or not. In other words it is necessary to create a strategy and approach procedure. However, as is known, it’s not always possible to use the ideal procedure with all equipment and analysis desired. Sometimes the restriction is imposed by the artwork itself, because of the size, location, condition, etc., or by the project deadlines, budgets, resources, availability of equipment, materials, etc.

It takes a very broad knowledge in the scientific area to make the most appropriate decisions. To illustrate this, two examples will be discussed here: the research done in the paintings on the ceiling of the Carmelite Church in SP, which used destructive methods, and the research done in an oil painting named “Annunciation”, which used non-destructive methods.

Method and Results

Samples of repaints (Figures 5a and 5b) and micro samples from the original painting were taken. The following techniques were employed: cross-section of the pictorial layer; optical microscopic (OM), scanning electron microscopy with energy dispersive analyzer of X-ray (SEM/EDS) and infrared spectroscopy (FTIR).

The elements of each layer were identified by MEV/EDS. The pigments were made at different times, and therefore it was possible to indicate when each layer was painted. Tables 1 and 2 reveal the mass percentage of each element in each layer. Figure 1 illustrates the image at OM and at MEV with the indication of the pigment present. Table 3 reveals the composition and epoch of each pigment.

Method and Results

In this case it was not necessary to take out samples of the painting. The original pigments and the repainting were identified by a non-destructive method: X ray fluorescence (XRF). The points marked at Figure 7 were measured in labo by the portable equipment TRACER III 3D (Figure 8). Figure 9 illustrate the overlapping of the spectra from the points 2B (red), 11B (white); 18B (blue); 21B (brown); 268 (rose); 268 (gray); verse.

Conclusion

Whenever possible, the ideal is to make the scientific investigation of works of art with non-destructive methods in situ analysis, analyzing the front of pictorial layer; however sometimes it is necessary to observe directly the overlapping strata. And in these cases the withdrawal of samples could be required. It is important to assess whether the response I intend to get justified the use of a destructive method of analysis.

The investigation made at Carmo’s Church contributed to reveal a very important painting (Figures 5a and 5b) and also part of Brazilian history and to determine treatment procedures.

The investigation made at Annunciation painting contributed to ensure the epoch of the painting and also to determine treatment procedures.