

The cleaning of icons' varnish

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1. Before conservation



2. During cleaning

The cleaning of paintings is a matter that raises a number of important points for discussion. It is certainly one of the most complicated and risky, and at the same time, important conservation procedures; however, it is not being confronted with the equivalent gravity.

Many conservators restrict themselves to empirical use of materials and methods, and end up integrating those procedures into routine work. This common practice may sometimes cause unpleasant results, even though these results might not always be visible. For instance, the fact that the solvent X can clean safely a variety of painted surfaces may simplify things, but it is certain that this is not always the ideal way of cleaning, even in cases where considerable damage does not occur, since the works may differ in regard to characteristics, such as the varnish, the pigment medium and the aging process. Many conservators have their own "favorite" materials that they use indistinctively in all cases. We must make a special remark to the fact that today, unfortunately, despite the exaltation that is taking place in the research field of the works of art, where information is provided on techniques, materials, constructional details and dating, that is to say a full and detailed knowledge of the object, the research ends right here; here ends the scientific approach of the work and usually gives its place to the "charlatanisms", or if the word sounds a little improper, to routine work.

The cleaning of icons' varnish

S. Stassinopoulos



3. W. Hogarth, 1761, engraving, "Time Smoking a Picture"



4. Robert Dossie's mid-18th-century book *Handmaid to the Arts*.
The section on the cleaning of varnish

However, enough said with the bad things. The aim of this report is not to grumble but to contribute, as far as this is possible, to the correct confront of the cleaning issue.

Before the breakdown of the subject, a short historical flash-back related to the cleaning of icons and paintings in general, is necessary.

Certain recipes are familiar, like the ones of Dionysios of Fourni, in which drastic ways of cleaning icons are reported, usually though, with equivalent effects. As far back as that time, especially in Mount Athos, the attempt of cleaning icons is well known. A text attributed to a Scholar named Daponte, in the 18th century, informs us that he had sent his personal collection of icons to Mount Athos in order to be "washed".

Furthermore, on an inscription of an icon at Kastoria, it is mentioned: "All the icons were washed, but only the one bearing the inscription was washed successfully". But even nowadays, some amateurs are still using destructive methods in order to clean icons. We can notice the same phenomenon in the cleaning of works of art in the big European art centers, whereas there, scientists who were lured by the adventure of conservation began quite earlier to take charge of the cleaning of artifacts.

Scientific methods of cleaning are already applied from the late 19th century, such as Max von Pettenkofer's, or later, in 1930, Doerner's, to end up with Ruheman's book based on cleanings and the first exhibition at the National Gallery of London with cleaned works.

In this report the approach of the subject will be based on the demands and rules which are now imposed.

The following points will be analyzed:

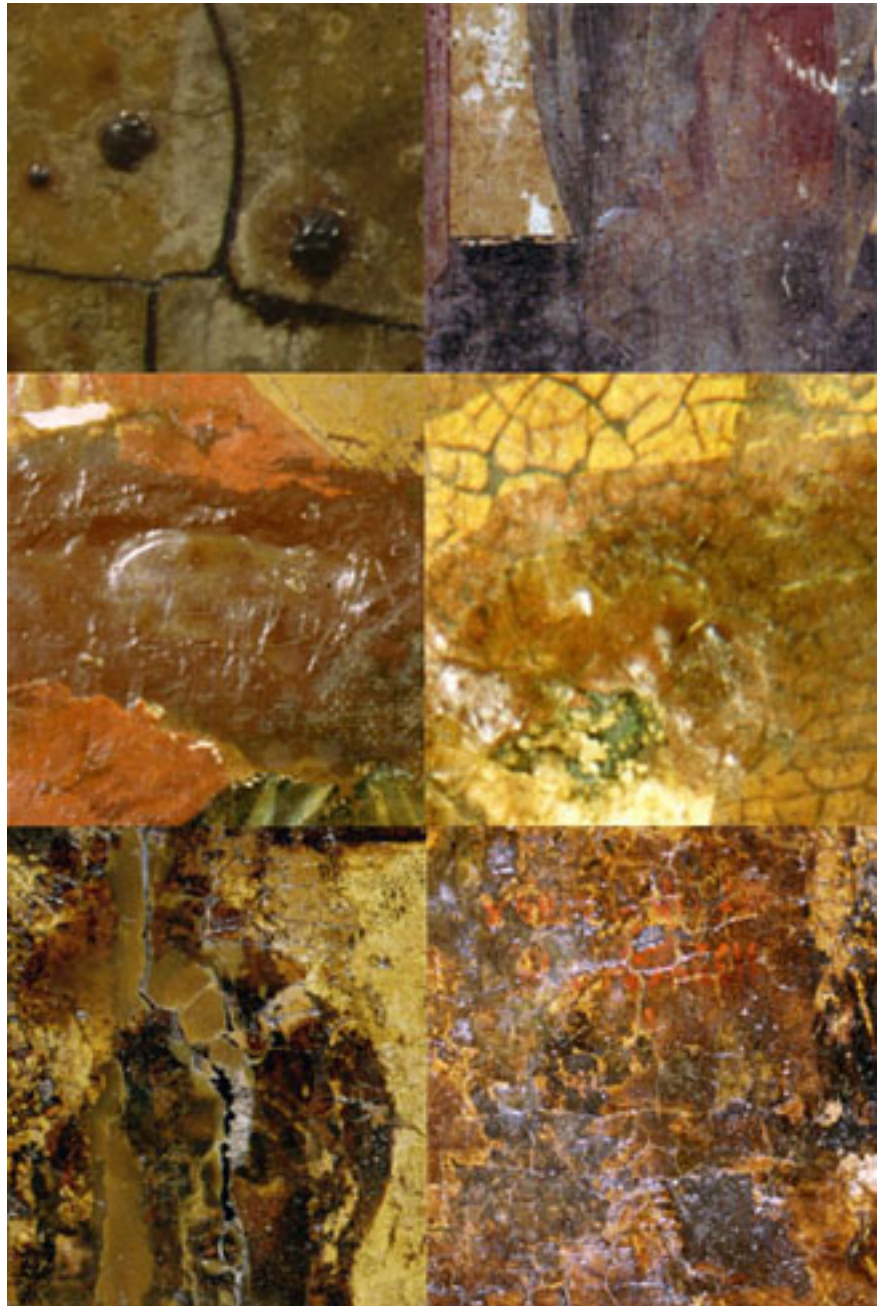
1) The structure and issues concerning the materials which lay over the painting surface.

The cleaning of icons' varnish

S. Stassinopoulos

- 2) Both the empirical and scientific methods for the quest of the suitable solvent or mixture.
- 3) The current, but also the traditional cleaning methods.

In addition to the above, proper ways of cleaning and issues concerning the safety in the working environment, will also be mentioned.



5. Different cases of icon's surface condition

Icon, as a worshipping kind of art, undergoes several "well-disposed" interventions, more than the other kind of paintings, especially concerning the varnish layers, where a combination of the most extraordinary materials (various oils, waxes, other resin varnishes, adhesives, soot) are added to the initial resin varnish.

Briefly, the following occasions in the cleaning of icons are being stated:

- 1) Varnish layers, with admixtures or deposits of variable materials and overpaintings.
- 2) Problematic paint layers.
- 3) Previous drastic cleanings that caused damage and weakness of the medium on the paint layer.
- 4) Varnishes with severe ageing, such as intense oxidations and total loss of their physical characteristics.
- 5) Varnishes with intense and deep cracks, as well as dense crackle pattern.
- 6) Varnishes with Linnoxyn.

Icons preserving their original varnish in good condition and without being subjected in any interventions are quite rare.

The combination of these materials which present different aging process and type of decay, makes the cleaning of icons one of the most difficult procedures. The conservator is required to remove these materials so that the icon returns to its initial, if possible, state.

The uniqueness of icons raises concerns regarding the full acceptance of all that has been written on the cleaning of paintings, all the more since singularities and particularities change even amongst icons originating from different regions or periods. It is worth mentioning that even in the case of the icons being kept in St Catherine's Monastery at Mount Sina,



6. St Catherine's Monastery storage room with icons



7. Modest laboratory at the St Catherine's Monastery

complex conservation issues arise. In these specific icons one can meet all the different techniques and interventions that have occurred in the past.

As a consequence, the procedure of cleaning of icons demands experienced conservators with full knowledge of the materials and techniques used in the making of the icon that undergoes cleaning.

Furthermore, specialization in icons originating from a specific region or, even if it sounds a little exaggerating, attributed to a particular school or period, would be very useful.

With this as a prerequisite, let us see the actual work and its phases:

- 1) Study of the data obtained from the use of diagnostic methods (whenever possible).
- 2) Extensive examination of the painting surface through a stereomicroscope.
- 3) Choice of possible solvent, depending on the condition of the underlying paint layers.
- 4) Selection of the final solvent mixture.
- 5) Selection of the cleaning method.

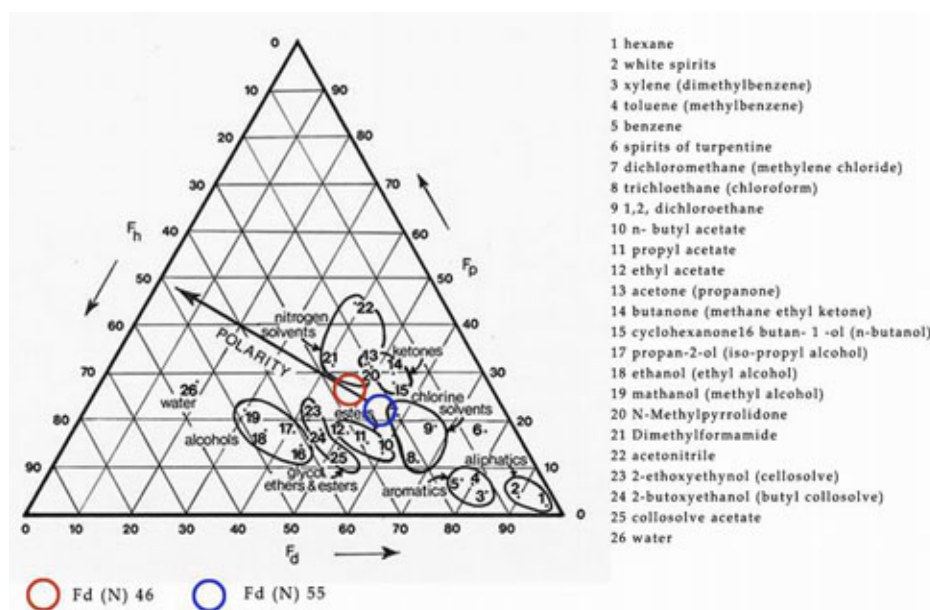
At this point, the following three phases, will concern us:

1) The procedure of choosing a suitable solvent or mixture.

In the theoretical field, a large number of previous publications, some written by Ruheman, Torraca, Feller, Masschelein-Kleiner, as well as some contemporary ones, such as those written by Wolbers, offer great help. In these publications the properties of the solvents are defined, as well as their proportional use. The classification of the solvents by J.P. Teas in the homonymous "triangle" has contributed significantly in the understanding of the properties and the action of the solvents. A characteristic example is the application of Teas' Triangle by R. Feller in order to create a test which helps in the location of the varnish solubility

The cleaning of icons' varnish

S. Stassinopoulos



8. The classification of the properties and action of solvents by J.P Teas

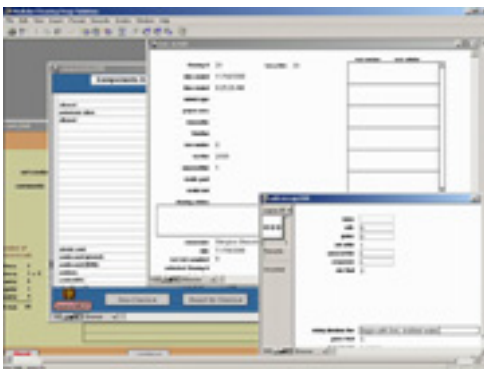
coordinates in the relative Triangle. The use of this test, in the long run, lead to the distinction of specific **groups of icons with similar solubility coordinates as regards to their varnishes**. Therefore, this test gives us the chance to choose among solvents or mixtures of solvents whose coordinates are similar to those given by the test. Thus enabling us to use a solvent according to the properties of the specific varnish. Nevertheless, the complexity of the icons bearing multiple interventions, does not always allow the application of R. Feller's test. This leads us to the use of traditional and well-known recipes in combination with contemporary materials proposed in the test. The series of solvents that Masselein-Kleiner suggested have also been tested. In the past few years, a radical method of cleaning was presented by R. Wolbers that has already been used by some conservators in the cleaning of oil paintings. This particular method uses a combination of chemicals that saponify the organic solvents or transform them to a gel, allowing them to be applied in a better and more gentle way on the work of art. Recently, we applied this method on icons, but I am afraid we must not jump into conclusions yet. Two relevant free-access



9. Solvent Solver



10. Wolbers Cleaning test



11. Modular Cleaning Program

programmes can offer significant help, and anyone who might be interested can track them down in "Conservation on Line" (<http://palimpsest.stanford.edu/>).

1) "Solvent Solver" helps in the calculations of the percentage proportions of solvents so that the final mixture can have the appropriate coordinates in the Teas' Triangle.

2) "Modular Cleaning Program" is a more complicated programme. It provides us with a large Data Base of solvents, providing us with information on their properties. It is especially useful for those who work with Wolbers' method. The **Modular Cleaning Program** was developed by Chris Stavroudis, Paintings Conservator in Private Practice in Los Angeles with the cooperation and support of Professor Richard C. Wolbers, Winterthur / University of Delaware Art Conservation Program.

The aim of this report is not to present all these methods, but to show that every conservator can and is obliged to seek scientific methods that will make the selection of the solvents easier, and also provide him with a safer way of cleaning.

2. The final selection of solvents and their percentage proportion in the mixture is also important to the work and to the conservators, since they must choose amongst the solvents which are less toxic or hazardous. It is a miracle that we, the older conservators, despite minor health problems which have appeared over the years, have survived after a long use of dangerous solvents and without any precautions at all.

It is reasonable that the health issue was, and still remains, the first to be considered in the final selection of solvents, despite the better safety systems available today. Still, there are many more parameters one must take into account, such as:

The cleaning of icons' varnish

S. Stassinopoulos



12. Cleaning tests (setup)

- The solvent's volatility.
- The deceleration of the evaporation process, and the presence of solvent residues on the surface (Dimethyl formamide and White Spirit).
- The complete removal of the solvents residues, such as the saponification products.
- The possibility of mixing up solvents that belong in different categories like alcohols and aliphatic hydrocarbons.
- The effect of the inhibitory factor of a solvent in the drastic action of another one.

The consideration of all these factors simultaneously is necessary, and after a while it becomes an automatic part of the practice of a conservator.

3. However, cleaning significantly depends on the skills and the experience of the conservator, assisted by the scientific methods available to him. The cleaning (application of the solvent - removal of the varnishes and other materials) is achieved with the use of :

1) a cotton-swab (its use varies from one occasion to another),



13. Cleaning tests



14. Cleaning tests

The cleaning of icons' varnish

S. Stassinopoulos

2) a soft small paintbrush for the application of the material but also for the removal of the varnishes without abrasion,

3) a compress to soften the, sometimes too hard, surface of the varnish (used in a preliminary stage), and finally,

4) a surgical scalpel to accelerate the process.

I believe that it is unnecessary to analyse the methods of cleaning; to be precise this is the everyday practice of all our colleagues. Through the brief flash-back and all those mentioned above, it has been made clear that the only thing that has not changed through the years is the procedure of cleaning. I believe that this will remain the only method of cleaning in the years to come.

In order not to unfairly treat some of the efforts that are being made for a radically different dealing with cleaning, I will point out the contribution of Boissonas in the cleaning of paintings with a sandblasting technique (microfriction), (a technique that we also used recently on painted woodcarvings), as well as the efforts made by means of laser technology, especially by the Institute of Technological Applications and Professor K. Fotakis. Laser technology has a broad use in many fields of conservation, but for the time being, as far as icons concerned, plays an assisting role, and it is certain that it will take some time to be accessible in our laboratories.



17. Curls over painted, UV fluorescence

18. Curls before cleaning

19. Half cleaned painting with the initial curl at the left side



20. detail half cleaned



21. The same detail viewed with UV fluorescence



15. micro-friction apparatus



16. An example of a laser cleaned painting

The experience in the use of materials, the knowledge of the painting technique and the solvents' properties, combined with the examination by means of a stereomicroscope and UV lamps, can guarantee a successful cleaning.

In conclusion, the extent of the cleaning, an issue which is not related to the potency, (this concerns the bad or the perfunctory cleaning), must concern us all. We frequently hear some of our colleagues speak about partial cleaning. I would probably agree with the partial removal of the varnish, if that was something that could be done miraculously. When we perform a chemical cleaning, how is it possible that the solvent won't penetrate the rest of the varnish layer? And as a result, doesn't this varnish act like a compress on the paint layer? And how capable are we to remove part of the varnish without damaging the rest? Even worse, I recall that in the past, some of my colleagues used to gather the cotton-swabs, so that they could reuse the old varnish in order to give a patina to the icon. I don't think I should comment on this issue any more.

Because of these -and for many more reasons tend to suggest the full removal of the varnish, provided that there is a secure difference between the solubility of the varnish and that that all the parameters

The cleaning of icons' varnish

S. Stassinopoulos

which have been mentioned in the selection of the solvents have already been considered. This is also the point of view of the conservation laboratory of the Benaki Museum during the 32 years of its existence: complete removal of all the external elements and oxidized varnishes as far as the work of art permits.

Some people believe that the icons were painted in such vivid colours just because the temples were poorly lighted and suggest that today we should leave a patina on the icon.

Even if that's the case, I believe that we should rather lower the lights at the Museums than distort the artistic value of a work. Accordingly, in order to avoid a negative evaluation of the restoration work at the Sistine Chapel, based on the conviction that the soot should never have been removed from Michelangelo's work, spotlights should never have been installed.

The only matter that contradicts the basic principals of conservation is the irreversibility of the cleaning procedure. For this reason, we have to be absolutely certain that the varnish can be securely removed and then perform the procedure with responsibility and after close examination.

In any other case, we should restrict ourselves to preventive conservation.



17. St. Anne, end of 15th cent., during cleaning

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142

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The cleaning of icons' varnish

S. Stassinopoulos

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