

CENTRO NORDICO DEL RESTAURO A FIRENZE

The Nordic Centre for Restoration in Florence 1967-70

A summary on the 50th anniversary of the flood of Florence 1966



Florence, Piazza Duomo, in the morning of 4th November, 1966 (Photo Nicla Falconi)

Erling S. Skaug

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Centro Nordico del Restauro a Firenze

*A summary on the 50th anniversary of the
Flood of Florence in 1966*

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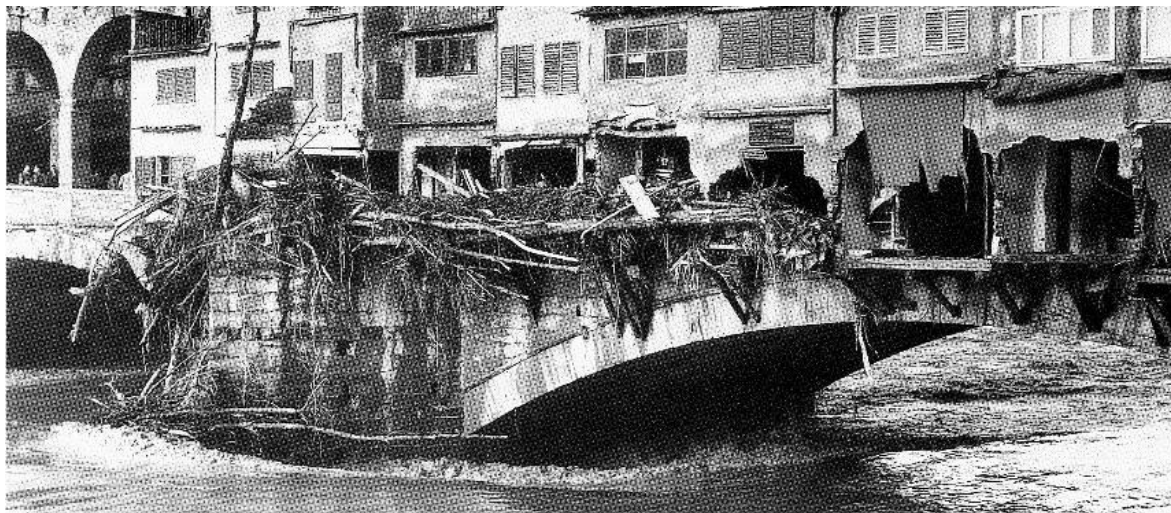
A FIRENZE *The Nordic Centre for Restoration in Florence, 1967-70*

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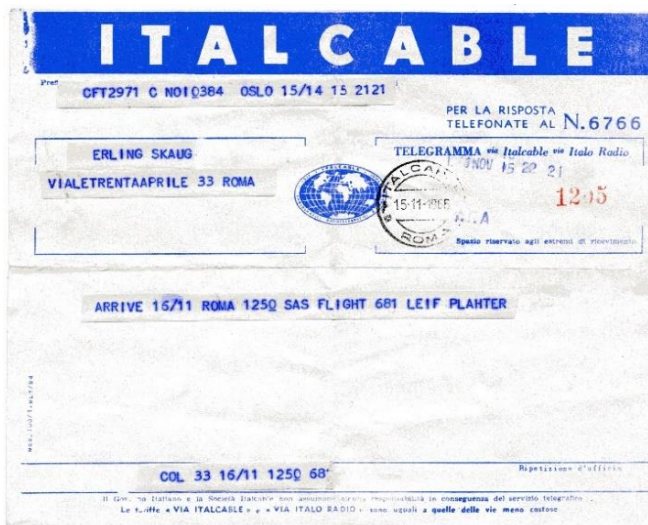
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Ponte Vecchio with goldsmiths' shops destroyed by the flood.



1. PRELUDE

«Do you still have your rusty old Volkswagen?» The long-distance call from Leif Einar Plahter, chief conservator at the National Gallery in Oslo, reached me through the students' telephone in the corridor of the Norwegian Institute in Rome. After a year's internship at IRPA, Brussels, I studied this autumn at the Istituto Centrale del Restauro, and was preparing my final thesis of the recently established Norwegian study programme in paintings conservation.¹ The date was 15th November, 1966, nine days after the disastrous flood of Florence. We had had heavy rain in Rome, as in central and northern Italy at large, but the increasingly alarming reports of the damage to museums and libraries in Florence, conveyed by radio and newspapers for the past few days, left little doubt about the city's precarious situation.



«I just sent you a telegram» Leif continued, «pick me up at Fiumicino airport tomorrow night». So I did. In the early morning of the 17th we hit the road to Florence, with Björn Hallström, rector of The High School of Fine Arts, Stockholm, as the third passenger. The railways were closed, and getting to Florence was possible only by car. During our trip Leif detailed the plans that had been proposed by the Nordic museum authorities to organise a rescue operation with governmental support. Sigurd Willoch, director of the National Gallery in Oslo, had called his colleague in Copenhagen, Jørn Rubow, and they agreed on immediate action. Attempts to contact the Florentine authorities had been in vain with the

telephone lines out of order. A decision had been taken to send Leif to estimate the situation and find out if and how Nordic assistance could be arranged. Having been an intern at the Uffizi in the 1950s, he spoke Italian and had maintained a network there.

We arrived Florence in the late afternoon and drove up to Viale Torricelli in the southern hillside, where we had an agreement with the Dutch Institute for History of Art. The director, Dr. Bramanti, had kindly provided mattresses on the floor for our stay, which was to last for the next four days. We went for a stroll down to Piazzale Michelangelo. The familiar splendid view over the city was gone, all was dark. Only a few spooky searchlights powered (as we learnt the next day) by diesel aggregates were sweeping over the centre at intervals.

The next morning we drove downtown, parked at Piazza Pitti and walked over Ponte Vecchio, where the goldsmiths' shops had been smashed and their precious contents «gone with the stream». The Lungarno had collapsed several places, as if being bombed. From Via della Ninna, the headquarters of the Soprintendenza alle Gallerie, we were directed to key persons elsewhere in the city. We passed heaps of mud shovelled up by caterpillars; queues of people with bottles waiting for trucks with tanks of drinking water; and everywhere soldiers, students

¹ The first official programme of its kind in the Nordic countries, finally sanctioned in 1965. Most of the early students met its ideal intentions in the following way: Three years of recognised art school plus a two-semester basic course in art history at the University, followed by five years of practical conservation under instruction with a fixed curriculum, courses and exams in photography, documentation, chemistry and material science. It included an obligatory year in a recognised conservation institution abroad, and ended with a diploma work and an examination for a committee formally appointed by the Ministry of Education. By individual evaluation this programme was eventually recognised as equivalent to a Master's degree.



and other volunteers, nicknamed *gli angeli del fango* the mud angels – all busy with different kinds of dirty jobs from digging artefacts out of the mud to emptying basements of water and debris, bucket by bucket. At Piazza Santa Croce leather craftsmen were provisionally rinsing their products with a garden hose and selling them at half price. One of the elegant shops in Via Tornabuoni had already cleaned up its front interior, installed new glass and begun to arrange window exhibitions. Florentine morale is something.

Preparations had been made before Leif's departure from Oslo. Knut Berg, after years in the city conducting research on Tuscan 12th century illumination (and actually to be the next director of the National Gallery) had supplied us with several contacts that could help to provide a picture of the situation: Myron Gilmore, director of Villa I Tatti, the Harvard University Center for Italian Renaissance Studies, told us about the fund-raising by the Committee for the Rescue of Italian Art (CRIA), and about the TV programme in production by Franco Zeffirelli with Richard Burton as narrator. Other contacts were art historian Eve Borsook, who knew «everybody» and was a walking dictionary of anything Florentine, and Danish-born Kirsten Aschengreen Piacenti, who was living in Pisa – with husband Franco Piacenti, professor of chemistry at the University of Pisa – but affiliated to the Florentine authorities, a lady *molto in gamba* who turned out to become the Nordic Centre's guardian angel. Various tips eventually helped us to track down the Soprintendente, Professor Ugo Procacci, who was rushing all over the city. Not even his right hand, Dr. Umberto Baldini, seemed to know his actual whereabouts from one minute to the next.

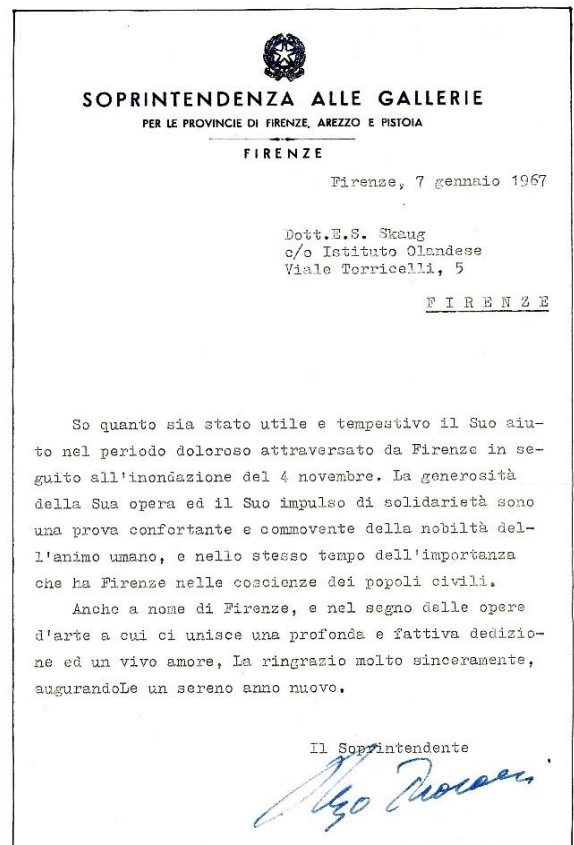
We finally found Procacci jogging down Borgo Pinti in the direction of Santa Croce and ran up to his side. Leif presented our inquiry in the briefest possible way:

- Do you want help from abroad? *Yes, please.*
- Money or restorers? *Both, please.*
- When do you want us to come? *Next summer.*

Mission completed. Meanwhile Björn Hallström had met Emanuele Casamassima, director of the Archivio di Stato, and officials at the Biblioteca Nazionale, and achieved similar results. Besides paintings and sculptures in museums and churches the Museo Bardini and the Museo Archaeologico needed, among other things, experts in the restoration of musical instruments and pottery. There was no end to the tasks.

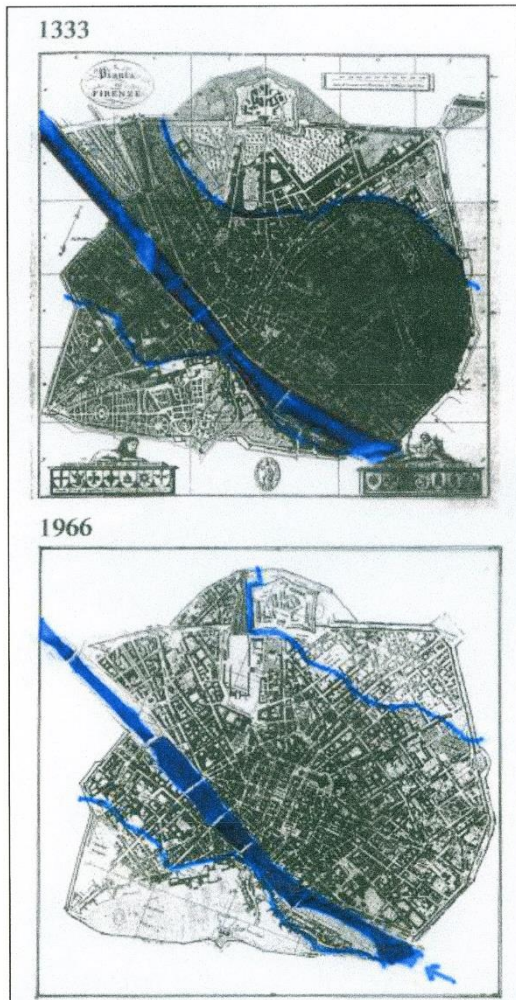
Darkness fell, and with only a coffee since breakfast our neglected stomachs announced their presence. We had to drive out to Certosa da Galuzzo to find a functioning restaurant, and could return to the Dutch Institute after an *assaggio* of the Tuscan cuisine – the first in a long row to come.

The three Nordic envoys received personal letters from Soprintendente Ugo Procacci after their visit to Florence in November 1966.



2. FLORENCE FLOODS IN HISTORY AND IN 1966

Arno, *la maledetta e sventurata fossa*, according to Dante, has flooded the city almost sixty times since the 12th century, particularly in 1333, 1557, 1740, 1757, 1844 and 1966 – the former and latter being the most catastrophic.²



The flood of 1333 held the record for centuries. Over 300 lives were lost, the city walls and fortifications suffered much damage, and all the bridges except Ponte alle Grazie collapsed. Ponte Vecchio, originally built in wood like the others, was reconstructed only twelve years later, in 1345. Following the flood Giotto – a painter, not an architect, but a person of great authority and rare administrative skills – was nominated by the commune on 12th April 1334 as a city architect to oversee the repairs. He recommenced work at the same time on the Duomo after the standstill on Arnolfo di Cambio's death some thirty years before, and founded the *campanile*.³

The flood of 1966 superseded the one of 1333 by 60 cm. After incessant rain in the beginning of November the dam at Sievane burst on the morning of the 4th, and a storm surge estimated to between 4000 and 4500 cubic metres per second,⁴ moving at a speed of 60 kilometres per hour,⁵ hit the city, bringing with it trees, cars, corpses of animals and other heavy objects. The 4th was a holiday, and no lives were reported as lost. Around the Museo del Bargello the waters reached 4.20 metres, and in the Santa Croce area almost 5 metres, leaving everywhere black lines on the walls from the floating fuel oil as testimonies to the event.

The logistics of damage to artworks were eventually clear: 949 paintings on canvas and panel, including the important painted crucifix by Cimabue in the museum of Santa Croce, 141 mural paintings and mural cycles, 213 sculptures in wood and marble, etc.⁶ Books and library material were quantitatively much worse off. The deposits of the Archivio di Stato were located in basements, with parchment manuscripts reacting violently to water. In the Biblioteca Nazionale ten-thousands of volumes were submerged or buried in mud.

Indisputably this was an event beyond local interests. Florence, with its monuments, history and works of art is world heritage.

² For the previous floods, see Losacco 1967.

³ Surprisingly, Giotto's nomination in April 1334 has never been connected with flood of November 1333, but see the collected evidence in Skaug 2013 – so far uncontested.

⁴ Nencini 1966, p. 42.

⁵ Di Leva 1966, p. 8 and n. 9.

⁶ *Ibid.*, p. 75.

3. ORGANISATION OF THE NORDIC CENTRE

As soon as the waters receded and the extent of the catastrophe became evident, it was realised that the enormous task of conservation and restoration could be solved only by additional assistance from abroad. Large amounts of money were raised, and Florence received numerous offers both of technical equipment and of expertise. Museum officials in Denmark, Norway, Finland and Sweden proposed that their professionals participated in the rescue. It was clear from the outset that only consorted Nordic action would be adequate for the task.⁷

Reports from Florence had been deficient and in part contradictory. It was desirable to get a first-hand impression of the type and extent of the destructions as soon as possible. To this end, as described in Chapter 1 above, three envoys visited the city in the period 17-21 November, with the mandate also to make inquiries with the Florentine authorities about a possible Nordic rescue project.

During our stay we could observe the efficient first aid measures undertaken by the Italians, especially on the categories of objects most vulnerable to submersion in water, such as paintings on panel and canvas, wooden sculpture, furniture, books and documents. The flooded material in archives and libraries had already partly been evacuated to other cities with facilities for drying and temporary storage (illustration to the right). Paintings had been placed on the floor in churches and museums with provisional front protection, waiting to be transferred to suitable localities under preparation. Panel paintings in particular were going to the *Limonaia* in the Boboli garden, a building with



ground area of 100 x 10 meters (above left), which, after damp proofing, would be fitted with humidifiers to maintain the high relative humidity necessary to prevent a too rapid drying out.



The Florentine authorities responded very positively to the Nordic initiative. The need for conservators of paintings, furniture and books was emphasized. Existing workshops had been destroyed by the flood, and it would take several months to renovate and equip new facilities. Foreign conservators could therefore be received only towards the summer of 1967.

⁷ Much of this chapter is based on Plahter 1969. A request to the Danish Ministry of Culture was made by Beate Federspiel, docent at the School of Conservation, Copenhagen, concerning the documents of the Nordic Action Committee. Regrettably it turned out that these papers, including three years of quarterly reports, could no longer be found. Hypothetically, they have been transferred to Rigsarkivet, where Mette Bjarnhof's report of 2008 on the flood, written on the Ministry's request, is preserved (e-mail to the author from Mette Bjarnhof, 27th June, 2016).

Based on this information, representatives from the Nordic Ministries of Culture and Education met in Stockholm on 4th February, 1967, and agreed to establish a government-guaranteed Nordic Centre for Conservation in Florence.⁸

In a subsequent meeting in Copenhagen on 15th June an Action Committee was formed, consisting of directors of museums, archives and libraries, and of conservators. Jørn Rubow was elected chairman, with members Ove K. Nordstrand and Steen Bjarnhof (all Denmark); Pehr Ekblom, Mauri Favén and Aune Lindström (Finland); Sigurd Willoch, Dagfinn Mannsåker and Leif Einar Plahter (Norway); and Björn Hallström, Rolf Vallerö, Sven B. F. Jansson and Sten G. Lindberg (Sweden). The Committee constituted itself as a legal entity under the Danish Ministry of Culture, with a secretary from the Ministry.

The Committee would be formally responsible for the activity in Florence and of its finances. The project was to last for three years, beginning in the summer of 1967. A director, appointed for one year, would serve as the point of contact between the Committee and the Florentine authorities and send quarterly reports with accounts to Copenhagen. Leif E. Plahter was appointed director for the first year (1967-68), Erling S. Skaug for the second (1968-69), Steen Bjarnhof for the third (1969-70), and Björn Hallström as deputy director in overlapping periods to secure continuity. The directors would themselves be active conservators, taking part in the practical work.

The participants from the four countries would serve for periods varying from two to six months. As a point of departure their numbers would follow a simple formula: Denmark and Sweden would each send two persons annually (two man years), and Finland and Norway one each, i.e. 6 persons annually (six man years) and 18 total for the three years. The proportions 2:2:1:1 were reflected in the countries' respective contributions to the total budget, see below. Additional personnel would be considered as the project went along, and according to the resources available any time. The fund raised in Finland, *Pro Firenze*, allowed a considerable increase of Finnish conservators, and the one raised in Denmark, *Firenzehjælpen*, allowed more participants from Denmark, Sweden and Norway. As shown by the lists in Chapter 4 below the actual number increased from 18 man years to 35 years and 8 months.

A state-guaranteed budget for the three-year period provided assistance and office expenses, acquisition of equipment and materials etc., totalling 420.000 Danish crowns (DKK, 1967). In addition, the impressive result of *Firenzehjælpen*, DKK 500 000, was agreed to finance the first year of the Danish state contribution, and the rest, c.450 000, would add up to a total budget of DKK 870 000 (1967). Using consumer price index and converted to Euro this corresponds to almost € 690 000 in today's value.⁹

Salaries, per diem and travel expenses paid by the institutions lending their personnel should be added to this basic budget, in 1967 estimated to about DKK 600 000 for the first year.¹⁰ The greater number of conservators in the final year, calculated in man years, makes for DKK 2.253 360 million (1967). According to the same calculations as above, this would, with employer's tax added, correspond to € 1.895 620 million in today's value (*alternative A*). However, the same project would cost much more today. The relative rise in salaries for publicly employed conservators has by far exceeded the rise in consumer price index, as a result

⁸ For details see Plahter 1969, pp. 6-8.

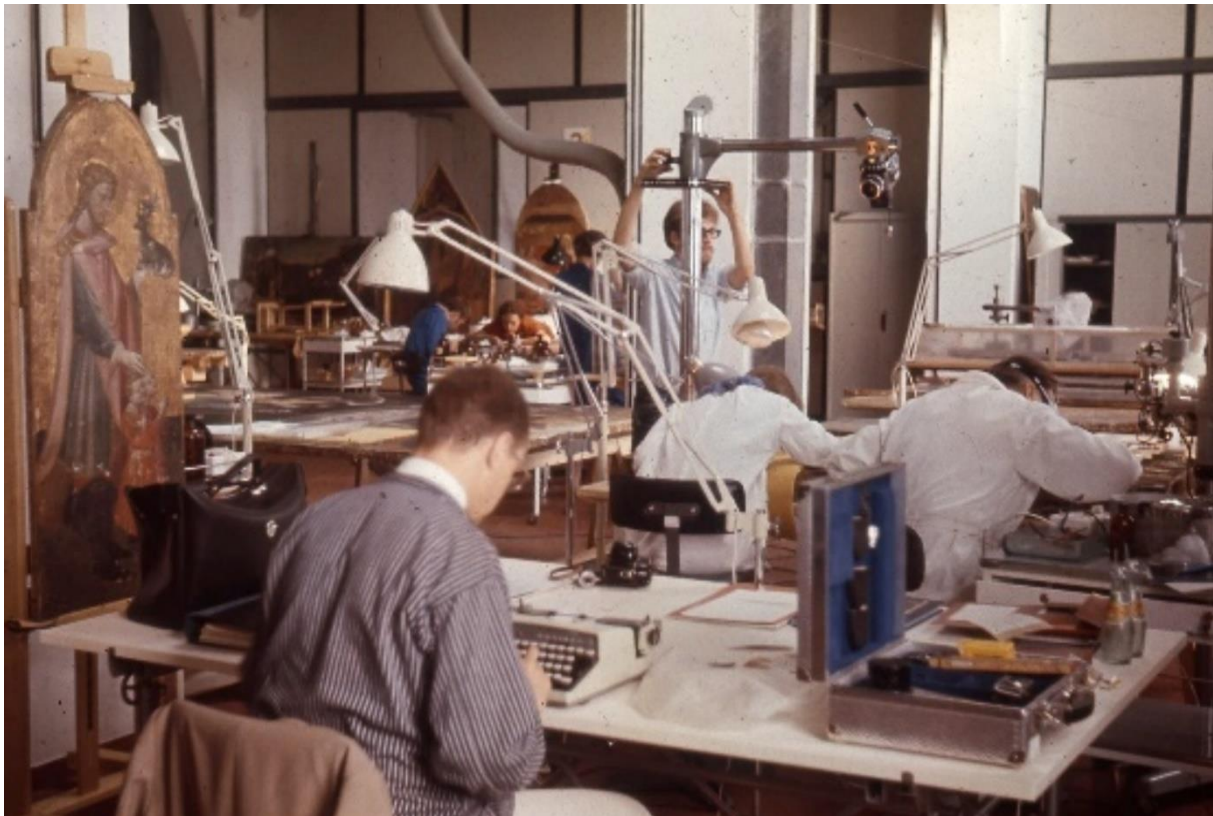
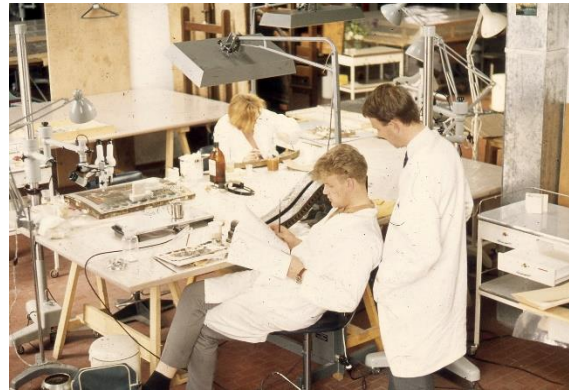
⁹ For the estimate of salaries, per diem and travel in 1967 the exchange rate of Danish crowns (DKK) vs Norwegian crowns (NOK) was 103.46 (information from Central Bank of Norway). The rise in Norwegian consumer price index 1967-2015 (SSB/Central Bureau of Statistics, Norway) is 819.7 %. This is not necessarily valid for these kind of expenses, neither for all the Nordic countries. In the absence of better information, the sum (NOK 21.063 405 millions) was converted to Euro according to the average exchange rate in June 2016 (100 € = NOK 936,55).

¹⁰ Plahter 1969, pp. 12-13. Employer's tax was not included in Plahter's figures, and has here been set at today's level of 14.1 % (figure kindly given by administrative head of office Harald Schmedling, Oslo University).

of the rise in formal education of conservators in the Nordic countries – and elsewhere in the world.¹¹ A conservative estimate for 102 participants, with per diem and travel, may mean at least € 6.318 750 millions for a parallel Nordic project today (*alternative B*).

By adding budget to salaries, the total expenses of the Nordic project 1967-70 can thus be estimated to either a minimum of € 3.585 690 millions (A), or at least the double, € 7.008 750 millions (B) as a hypothetical comparison if the project had taken place today. The value of the additional assistance offered by the Danish and Norwegian state archives during after the project (see final comments of Chapter 4 below) has not been calculated.

Two interiors from Fortezza da Basso. Below Björn Hallström (S) at the typewriter, Mirja-Liisa Weismaa (SF) and Ewald Håkansson (S) bent over their work, Jesper Bruus-Pedersen (DK) busy with the camera, and far back Anita Riise Birger (S). Right: Elsa Granov (DK) at work while Arne Bakken (N) and the author go through a report.



¹¹ With conservation established as academic studies during the past few decades, a wide spectrum of positions has been available, from curatorial to museum director. The formal levels are Ba, Ma, and PhD. According to trade union statistics (Norsk Forskerforbund) state employed conservators are, as a minimum, placed as engineers at Ma and Ba level, respectively. To simplify a comparative model for a hypothetical rescue action today one might suggest 50 % of each level, which would also include expert craftsmen. This may give an average salary for mid-career personnel of NOK 475 000 before tax, plus 14,1 % employer's tax for the expense *per capita* for the institution putting its personnel at disposal: 102 participants (cf. Chapter 4 below) would thus cost NOK 55 284 000. Per diem for Italy today is NOK 900, which for 35 years and 8 months (13 015 days) would amount to NOK 11 713 500. Travel both ways may be done for NOK 5000 per person, i.e. NOK 510 000 for 102 participants (although some of them came for more than one stay). Total amount (55 284 000 + 11 713 500 + 510 000 =) NOK 67 507 500. Clearly this figure is hypothetical. Exchange rate for € as in note 9 above.

4. PARTICIPANTS

The lists below give each member's period of stay and, with a few exceptions, specialisation. As a rule, the participants were given leave of absence from their institutions, with their salaries, travel and per diem paid. The Finnish and Danish funds helped to expand the project (cf. Chapter 3). It has not been possible to identify the institution of each participant, so only the names are listed. Durations of stay have been rounded up to full months.

NORWAY (N)

Leif Einar Plahter	July 67-July 68	12 months	Paintings, director 1st year
Unn Simonsen Plahter	Aug 67-July 68	11 "	Scientific analysis
Nanina Hurum (Løken)	Dec 67 -June 68	7 "	Secretary, 1st year
Erling S. Skaug	June 68-June 69	12 "	Paintings, director 2nd year
Bente Thurmann-Nielsen	June 68-June 70	24 "	Secretary, 2nd and 3rd year
Rolf Egil Johansen	Sep 68 -Nov 68	3 "	Paintings
Kari Johansen	Sep 68 -Nov 68	3 "	Documentation/photo
Henry Pedersen	Sep 68 -Dec 68	4 "	Books/documents
Arne O. Bakken	Mar 69 -May 69	3 "	Paintings
Johan A. Haugen	Apr 69 -May 69	3 "	Books/documents
Brynjulf Fosse	July 69 -Sep 69	3 "	Documents
John Egset	Sept 69 -Dec 69	4 "	Books/documents
Truls M. Løken	Jan 70 - Mar 70	3 "	Paintings
Gun Løken	Jan 70 - Mar 70	2 "	Paintings (part time)
Turi Kooter Wilson	Jan 70 - Mar 70	3 "	Paintings
Siri Kaland	Apr 70 -May 70	2 "	Paintings
Bjørn H. Kaland	Apr 70 -June 70	3 "	Paintings
Svein A. Wiik	Apr 70 -June 70	3 "	Paintings
Mette Bjerke	Apr 70 -June 70	3 "	Paintings
Hanne Thurmann-Nielsen	Apr 70 -June 70	3 "	Documentation/archive
20 persons from Norway.		Sum = 111 months	(9 years + 3 months)

FINLAND (SF)

Niilo Suihko	July 67-July 67	1 month	Paintings
Knut Engblom	July 67 -Sep 67	3 "	Books/documents
Tuulikki Ikäheimonen (*)	Oct 67 - Feb 68	5 "	Paintings
"	Mar 68 -Apr 68	2 "	"
Gösta Östman	Nov 67 -Dec 67	2 "	Woodwork/object
Sinikka Gustavson	Jan 68 - June 68	6 "	Paintings
Thorvald Lindquist	Apr 68 -June 68	3 "	Archaeological pottery
"	Dec 69 -Mar 70	4 "	"
Mirja-Liisa Waismaa (**)	June 68-Aug 68	3 "	Paintings
"	Mar 70-May 70	3 "	"
Helena Pylkkänen	June 68-Aug 68	3 "	Paintings
Pirkko Kosonen	Sep 68 - Dec 68	4 "	Books/documents
Aili Törn	Sep 68 - Dec 68	4 "	Books/documents

(continued)

(*) Ikäheimonen-Kilpinen

(**) Waismaa-Pietarila

Karin Kolhonen	Feb 69 - Mar 69	2 "	Books/documents
Ulla Kiljunen	Apr 69 -June 69	3 "	Paintings
Veikko Kiljunen	Apr 69 -June 69	3 "	Paintings
Carlo Bergman	June 69-Aug 69	3 "	Musical instruments
Disa E. Bergman	June 69-Aug 69	3 "	Textiles + Books
Liisa Hänninen	July 69- Aug 69	2 "	Paintings
Outi-Lena Saukkonen (***)	July 69- Aug 69	2 "	Paintings
Hilka-Liisa Nieminen	June 69-July 69	2 "	Textiles + Books
Pentti Pietarila	Jan 70 - Mar 70	3 "	Books/documents
Esko Pietilä	Jan 70 - Mar 70	3 "	Books/documents
Kari Appelgren	Mar 70-May 70	3 "	Paintings
Aino Perkiö	Mar 70 -Apr 70	2 "	Books/documents
Irma Vauhkonen	Mar 70 -Apr 70	2 "	Books/documents
Pehr Ekbohm	Apr 70-May 70	2 "	Insect research
Alice Engblom	Apr 70-May 70	2 "	Books/documents
Anja Rantala	May 70 -Jun 70	2 "	Textiles

 (***) Saukkonen-Sievänen

26 persons from Finland.

Sum = 82 months (6 years + 10 months)

SWEDEN (S)

Gunnar F. Schiller	Aug 67- Oct 67	3 months	Paintings
Mathias Pehrsson	Aug 67- Oct 67	3 "	Paintings
Jan Boström	Aug 67- Oct 67	3 "	Paintings
Georg Allered	Oct 67- Nov 67	2 "	< ? >
Maud E. Bennel	Sep 67- Dec 67	4 "	Paintings
Arnold Hansen	Sep 67- Dec 67	4 "	Woodwork
Anita Riise Birger	Mar 67- Oct 67	7 "	Paintings
Ola Westerudd	Apr 68 - Sep 68	5 "	Paintings
"	May 69- Sep 69	4 "	"
Rune Håkansson	May 68- Sep 68	5 "	Paintings + Woodwork
"	May 69- Apr 70	12 "	"
Björn Hallström	May 68 -Sep 68	5 "	Paintings, deputy director
"	June 69 -Sep 69	4 "	" "
"	May 70 -July 70	3 "	" "
Dorrit v. Arronet Hallström	June 68 -Sep 68	4 "	Paintings
"	June 69- Aug 69	3 "	"
Ewald Håkansson	July 68 - Sep 68	3 "	Paintings
Arne Holm	July 68 - Sep 68	3 "	Woodwork
Carl-Axel Holm	July 68 - Sep 68	3 "	Woodwork
Lars Uno Kullander	Aug 68 - Oct 68	3 "	Paintings
Gunnar Larsson	Sept 68 - Oct 68	2 "	Books/documents
John Petterson	Sept 68 - Oct 68	2 "	Books/documents
Kristina Winberg	Sept 68 -Dec 68	4 "	Books/documents
Helge Christensson	May 69 -July 69	3 "	Paintings
Klaus Peter Schmid	May 69 -Sep 69	5 "	Paintings
Lars Jansson	July 69 -July 69	1 "	< ? >
Christer Wildenstam	Sept 69 -Nov 69	3 "	Paintings
Brita Östmar	Sept 69 -Dec 69	4 "	Paintings

(continued)

Margit Söderberg	Sep 69 -Dec 69	4 "	Paintings
Lars Göthberg	Jan 70 -Mar 70	3 "	Paintings
Vaaga Lindell-Andersson	Jan 70 -Mar 70	3 "	Paintings
Ingvar Brundell	Jan 70 -Apr 70	4 "	Books/documents
Ingrid Eklund	Mar 70-May70	3 "	Paintings
Jörgen Bengtsson	Mar 70-Jun 70	4 "	Paintings
Albert Eriksson	Mar 70-Jun 70	4 "	Paintings
Sven Wiklander	Apr 70-Apr 70	1 "	< ? >
Sture Åkerström	Apr 70 -Jun 70	3 "	Books/documents
31 persons from Sweden.		Sum = 139 months (11 years + 7 months)	

DENMARK (DK)

Anette Stabell	Aug 67- Oct 67	2 "	Secretary
Nora Fenneberg Grant	Nov 67-Mar 68	5 "	Paintings
Niels Wivel	Jan 68 - Mar 68	3 "	Paintings
Bent Hacke	Jan 68 - Apr 68	4 "	Paintings
Lone Haarup	Apr 68-June 68	3 "	Paintings
Henrik Bjerre	Apr 68-June 68	3 "	Paintings
Skjold Lund	Apr 68-June 68	3 "	Woodwork
Finn Larsen	Apr 68-June 68	3 "	Woodwork
Rigmor Birkedal Kragh	May 68-Jun 68	2 "	Books/documents
Henning Madsen	July 68-Sep 68	3 "	Books/documents
Arne Møller Pedersen	July 68-Sep 68	3 "	Books/documents
Lone Bøgh	July 68-Sep 68	3 "	Paintings
Børge Toft	Sep 68-Nov 68	3 "	Books/documents
Peter Bang Termansen	Sep 68-Nov 68	3 "	Paintings
Hans Peder Pedersen	Sep 68-Dec 68	4 "	Books/documents
Mogens Larsen	Jan 69 -Apr 69	4 "	Paintings
Erik Løvborg	Feb 69 -Apr 69	3 "	Books/documents
Elsa Granov	Apr 69 -Jun 69	3 "	Paintings
"	Jan 70 -Mar 70	3 "	"
Kai Pheiffer Hansen	Apr 69 -Jun 69	3 "	Books/documents
Erik Barner Olsson	Aug 69-Oct 69	3 "	Books/documents
Steen Bjarnhof	Sep 69-July 70	11 "	Paintings, director 3rd year
Lars Djørup	Sep 69-Nov 69	3 "	Books/documents
Mette Bjarnhof	Oct 69 -Jun 70	8 "	Paintings
Karin Wegener Tams	Mar 70-May70	3 "	Paintings
Anne-Dorthe Rogild	Mar 70-May70	3 "	Paintings
Jørgen Høj Madsen	Apr 70-June70	3 "	Paintings
26 persons from Denmark.		Sum = 97 months (8 years + 1 month)	

TOTAL:

103 persons, total time (428 months) = 35 years + 8 months

In addition to the on-site work, the Norwegian and Danish State Archives received books and documents for conservation and restoration in Oslo and Copenhagen, respectively, during the years 1968-70. The Norwegian State Archive also received material for treatment after 1970.

5. WORKING CONDITIONS AND WORKS

(I) Paintings and sculptures

The Florentine officials had converted a large abandoned building into a conservation studio within the 16th-century walls of Fortezza da Basso, near the central railway station. Formerly used as stables, its floor area of 150 x 25 metres offered ample space for the purpose. During the hectic days in the immediate wake of the flood Superintendent Ugo Procacci had suggested the following summer as appropriate for our arrival, a date that turned out to be in error by a few months only. As an emergency solution Kirsten Aschengreen Piacenti (later appointed director of the Museo degli Argenti) resolutely emptied the museum of Palazzo Davanzati, a 14th-century house in the centre, and put it at our disposal, primarily for the treatment of sculptures.¹² The kitchen on the top floor served as an analytical laboratory, shared between our chemist Unn Plahter and her Italian colleagues Valerio Malaguzzi and Raffaella Rossi.



Other foreign experts in this initial phase were London colleagues Joyce Plesters, National Gallery, and Kenneth Hempel, British Museum, with his “Hempel pack” for the extraction of dirt and fuel oil from porous surfaces. Two young Americans from the Conservation Center, New York University,

also worked here.

Among the tasks begun in the Palazzo Davanzati were two 14th-c. polychrome sculptures from the Museo Horne and the complex wooden tabernacle of St. Sebastian from the church of Sant’ Ambrogio, described below. When the localities at Fortezza da Basso became available in the winter of 1967-68, Palazzo Davanzati continued to serve as a satellite for a while.

At the Fortezza we shared the largest hall with groups from Poland and Czechoslovakia plus individual restorers from England and

Germany. In the adjacent room we could follow the extraordinary treatment of Cimabue’s huge painted crucifix. We had a photographic darkroom built in the corner and received a generous area at our disposal for work tables, office for secretaries Nanina Hurum Løken and her successor Bente Thurmann-Nielsen, cupboards for reports, samples and documentation. It was all to be donated to Florence at the end of the three-year project, with microscopes and technical equipment.

Peter Termandsen (DK), Rolf Johansen (N), Bente Thurmann-Nielsen and Nanina Hurum Løken (inserted) at work in the Palazzo Davanzati, 1968.



¹² For further details, see Piacenti 2009, pp. 134-40.

The administrative responsibility for conservation fell under the then *Soprintendenza alle Gallerie*. During the post-flood works the organisation was changed, conservation was separated and amalgamated with the *Opificio delle Pietre Dure* (OPD) in 1975, with a Soprintendente of its own – first Umberto Baldini and presently Marco Ciatti, both art historians. Our day-to-day colleagues and supervisors were Gaetano LoVullo, the grand old man of Florentine art conservation; Edo Masini, of rare practical skills, responsible – among other things – for the challenging task of the large Vasari panels in Santa Croce; and Vittorio Granchi, who worked on the Cimabue. We could also follow Pellegrino Banella’s work on Donatello’s *Magdalen*.

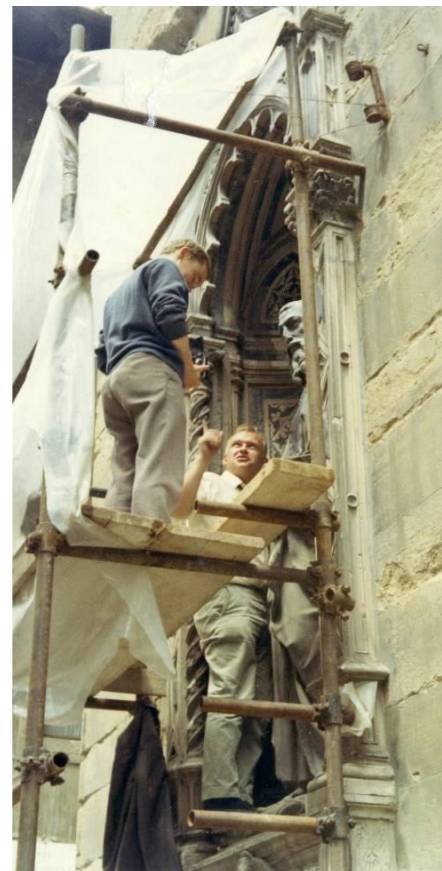


Fortezza da Basso. Works under treatment are two polychrome sculptures from Museo Horne, the St. Sebastian tabernacle from the church of Sant'Amabrogio, and the "Madonna del giglio" from the church of San Giuseppe being prepared for transfer.

The works entrusted to the Nordic Centre varied in degrees of complexity. Because of our long-term presence we could take on large, time-consuming tasks. Three of them have been published before, and will be reprinted here, one of them in a reworked version.

The first case on the list below was not among the flooded works, but a request from the Florentine authorities. To the right Leif Plahter on the scaffoldings of Or San Michele, who with his wife Unn examined and analysed the surface crust of Donatello’s marble sculpture of *St Mark* when a heated discussion over its condition arose.

For the seven entries 5.4-5.10 below Soprintendente Marco Ciatti of the OPD and Director Anna Mieli of the Florentine archives kindly put the available supplementary material at disposal. After the reorganisation of the conservation works our reports did no longer form a coherent archive, and since our records could not be retrieved in the Danish Ministry of Culture¹³ these entries have to some extent been reconstructed from memory and casual notes. Nonetheless they will, it is hoped, give an impression of what was achieved by our work in Florence.



¹³ See note 7 above.

5.1. Notes on the deterioration of Donatello's marble figure of St Mark on the church of Or San Michele, Florence. *Leif Einar Plahter and Unn Plahter*

(Scanned and reprinted from Plahter & Plahter 1971/1999)

Introduction

At the IIC New York Conference 1970, Kratz¹ presented a paper on the state of preservation of Donatello's sculpture of St. Mark and proposed a way of restoring it. The following notes are based on an examination of the figure, which the Florentine authorities asked us to undertake during a stay in Florence in 1967/68.² As our conclusions differ from those of Kratz, we consider that our results should be presented before any restoration of the sculpture is decided upon.

Our examination was mainly concentrated on determining the nature of a greyish-brown crust that covers most of the surface of the marble. The marble underneath the crust seems, in general, to be sound. Some of the protruding details, however, such as the nose, fingers, toes, garment folds, etc. are partly missing, the marble in these parts having acquired a sugary consistency.³

The analyses were carried out on samples⁴ taken from the marble of the sculpture and from the above-mentioned greyish-brown surface crust. For purposes of comparison, analyses were also carried out on samples of dust collected from the base of the sculpture as well as on samples taken out of the sandstone wall of the church. The analyses were made in the laboratory of the Palazzo Davanzati, Florence, at the University of Florence and at the Universitetets Oldsaksamling, Oslo. The techniques used for the examination included cross-sections, microscopic and microchemical methods, X-ray diffraction powder patterns, and infrared absorption analyses.

Examination

The gilding

The documents concerning the commissioning of the sculpture in 1411 have been published by Gualandi.⁵ The contract states that the figure should be *dorata et ritta con ogni ornamento oportuno* (gilded and provided with every proper ornament). Today traces of this embellishment can still be seen as a gilded ornamentation running along the borders of the garments. Because the dark surface crust covers the gilding, it proved almost impossible to trace continuous patterns. However, along the vertical border of the gown by the right leg, the pattern shown in Fig. 2 could be traced by calking.

Cross-sections

Cross-sections of samples reveal that the marble is covered by a brownish layer containing black and red particles. Where gilding lies on the marble, the brownish layer covers the gilding. In some sections a stratified structure can be observed in the crust. The line of demarcation between the marble and the crust is in some sections fairly straight and well defined, in other sections more diffuse.⁶ In vertical areas the crust is thinner (20 - 40 μ) than in horizontal areas (100 - 280 μ).

Microchemical tests

Microchemical analyses of the surface crust, including solubility and combustion tests, showed the presence of calcium sulphate, carbon black and iron oxide red. No conventional binding medium could be detected.

¹ A. Kratz, "An examination of Donatello's sculpture of St Mark on the church of Orsanmichele in Florence", *IIC Conference on Conservation of Stone and Wooden Objects, Section Stone*, New York 7-13 June 1970, pp. 77-83.

² The authors participated in the restoration work after the 1966 flood as members of the *Nordisk center for konservering i Firenze*.

³ U. Baldini: "Problèmes de conservation à Florence", *IIC Conference on Museum Climatology*, London 18-23 Sept. 1967, pp. 241-256.

⁴ 5 Samples were taken by Kratz (October 1967), 4 samples by the authors together with Mr. Kratz (May 1968) and 7 samples by the authors (June 1968).

⁵ M. Gualandi, *Memoire, originali italiane risguardanti le belle arti*, Bologna Serie Quarta, 1843, p. 104. Cf. also H. W. Janson, *The Sculpture of Donatello*, Princeton 1957.

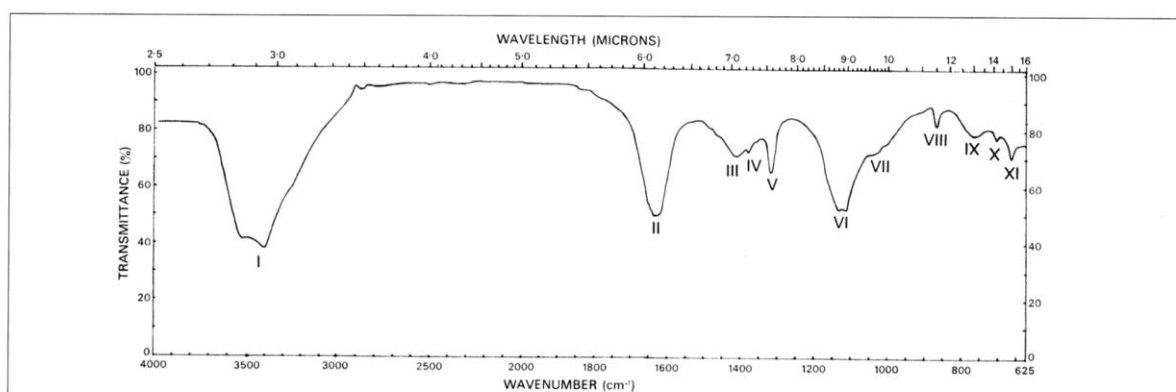


Fig. 3 Donatello, "St Mark". Infrared absorption spectrum of the brownish surface crust. The bonds have been interpreted as follows: I: 3500 cm^{-1} crystal water; II: 1630 cm^{-1} gypsum and calcium oxalate hydrate; III: 1415 cm^{-1} calcium carbonate; IV: 1380 cm^{-1} KBr; V: 1320 cm^{-1} calcium oxalate hydrate; VI: maxima at 1115 and 1145 cm^{-1} gypsum and a quartz (?); VII: shoulders at 1040 and 1000 cm^{-1} silicates (?); VIII: 870 cm^{-1} calcium carbonate; IX: 770 cm^{-1} calcium oxalate and α -quartz; X: 710 cm^{-1} calcium carbonate; XI: 665 cm^{-1} gypsum.

The severe damage suffered by the protruding parts (nose, fingers, toes) may be explained by the fact that such details have a large surface-to-volume ratio offering advantageous conditions for a large transference of carbonate from the marble core to the surface. As this process proceeds, the marble core will suffer from loss of material, and the structure will collapse.

Stambolov¹⁴ remarks that crusts developed on compact limestone adhere well to their substrata. On our statue the crust adheres very well to the marble. In places, however, where presumably the leaching of calcium carbonate from beneath the crust is sufficient to turn the marble sugary, the crust peels off.

It seems to be a general opinion that the ability to accumulate and retain soot and dust promotes the formation of a gypsum crust on calcareous materials. As noted by Hempel,¹⁵ an object that is thoroughly and constantly washed by water does not suffer to a great extent from sulphuration. The fact that specimens of the gypsum crust from vertical areas of the St Mark statue generally are much thinner than specimens from horizontal areas may be directly connected with the accumulation of dust.

The stratified structure observed in some cross-sections may have developed in the following manner: the first layer of gypsum is formed on the surface of the marble. Then each new formation of gypsum takes place on the surface of the previous layer.

Eventually, under the appropriate conditions, a visible stratified structure is built up. As no gypsum was found in the marble, probably little or no sulphuration takes place beneath the brownish crust.

The fact that the crust of gypsum covers gilding on the surface of the marble is not an unusual phenomenon; corrosion products very often migrate to the surfa-

ce of an object where they deposit. Gilding and layers of paint are hardly dense enough to prevent a solution of bicarbonate from penetrating to the surface layer of dust. This phenomenon is illustrated by the fact that a splash of red paint on the mantle lies between two layers of gypsum. The red paint has probably been splashed on to the statue only when some sulphuration had already taken place. Later new layers of gypsum developed on top of the red paint in the manner described above.

The gypsum layer contains a fairly large amount of calcium oxalate hydrate. Its origin is not very well understood. Kratz mentioned in his lecture at the New York conference¹⁶ that oxalates may be found in plants which, according to old recipes, have been used as colouring materials; the explanation for the presence of oxalate being that the statue had been painted with such colouring agents. In the discussion after Kratz's lecture, the presence of oxalate on calcareous materials, sculptures and buildings was confirmed by other delegates. No final explanation was put forward, but the fact that marble at times has been treated (polished) with oxalic acid was mentioned.

Judging by the X-ray powder patterns, the dust from the base of the statue has nearly the same composition as the sandstone in the wall of the church: apparently the dust is mainly a weathering product of the wall. The small amount of α -quartz found in the gypsum crust of the statue may be ascribed to the large content of α -quartz in the sandstone of the church.

Studies in Conservation, 16 (1971), pp. 114-118.

¹⁴ T. Stambolov, op. cit., p. 16.

¹⁵ K. F. B. Hempel, op. cit., p. 34.

¹⁶ Op. cit. (note 1 – above).

Post Scriptum, July 2016. The authors want to stress that the presence of weddellite based on XRD and IR analyses was tentative rather than conclusive.

5.2. The St. Sebastian tabernacle by Leonardo del Tasso in the church of St. Ambrogio in Florence. Technique and restoration. *Leif Einar and Unn Plahter*



(Scanned and reprinted from Plahter & Plahter 1975, beginning at "Description". Italian translation deleted for lack of space.)

During the flood of 4 November 1966 the monument was completely submerged and badly damaged. Its restoration was entrusted to the Nordic centre for restoration in Florence (1). The restoration began in September 1967 and finished in April 1970.

Description (Fig. 1)

Height 248.0 cm; width 116.0 cm; depth 38.0 cm.

The tabernacle, a funeral monument for the del Tasso family, is made of polychromed wood and set in a niche between the second and third left hand altar in the nave of Sant' Ambrogio in Florence.

The Saint is represented on a naturalistic base, nude (the original loincloth of painted woven fabric is missing) with his hands bound behind his back to a tree trunk. Four iron arrows protrude from his neck, left arm, right side and thigh.

The figure is standing inside a semicylindrical niche which is painted to imitate panels of red porphyry framed by white marble. In the upper part of the niche is a painted cornice imitating white marble, with a yellow frieze with grey ornamentation (bows, crowns, arrows, quivers, palm leaves). The niche is covered by a semi-cupola decorated with a painted greyish shell set against the painted red porphyry.

The niche is flanked by two pilasters surmounted by capitals with carved grotesques; the arch is framed by foliate carvings. Beneath each pilastre is the del Tasso coat-of-arms, and between these, a predella with a roundel painting of the Annunciation. The original polychromy on the parts surrounding the niche has to a great extent been removed by previous restorations, but traces show that these parts, like the niche, have been polychromed to imitate marble and porphyry: The sculptured parts (pilasters, capitals etc.) were white with some gilding, the flat parts (the predella, the front supporting the pilasters) seem to have been porphyry red.

In the spandrels two winged angels, holding a brownish crown between them, are painted in monochrome.

1) The Nordic center was primarily engaged in the examination and restoration of the polychromy, while professor Otello Caprara, Bologna, was responsible

for the woodwork. The whole restoration was supervised by the Soprintendenza alle Gallerie di Firenze.

The attribution of the monument to Leonardo del Tasso (1465-1500) goes back to Vasari (1). Most authorities consider the paintings as authentic works by Filippino Lippi (2). The monument is dated shortly before 1500.

Earlier treatments

The overall aspect of the monument has been seriously altered by earlier restorations. While the paintings and the inside of the niche have escaped disfiguring redecorations, the figure of the Saint and the tabernacle front surrounding the opening have undergone several restorations. The front of the tabernacle in particular has suffered heavily from these treatments, as the older decorations were scraped off quite thoroughly each time a new decoration was put on, leaving the original polychromy in a very fragmentary state.

Luckily the original polychromy on the figure of the Saint has escaped destruction, although the sculpture has twice been completely repainted and on other occasions, retouched in part.

It has not been possible to establish with certainty the correlation between all the various non-original layers on the different parts of the monument. However, the main features of three different redecorations can be identified:

1) The earliest redecoration, which seems to be quite old, is done in oil colours and regards only the sculpture. The figure was completely repainted with pink flesh colour (lead white and vermillion), brown for the hair and the base (iron oxide red and carbon black), and red on the lips and the blood stains (red organic lake). The tree trunk was partly retouched with green (carbon black and yellow ochre).

2) Sometime in the 19th century (3) the original polychromy on the front of the tabernacle was scraped off, a priming of gesso and glue put on, and the various parts painted green (chrome green) and white (lead white) with oil colours. Possibly at the same time the figure of the Saint was painted dark brown in tempera colour with gold highlights on the hair. (Fig. 3).

3) About 1900 the monument was given the appearance it retained until the flood in 1967. While the brown repaint on the sculpture was left untouched, the front of the tabernacle was again scraped clean. The carved parts were painted brown with highlights in gold. The predella and the flat front supporting the pilasters were left with the bare wood exposed. (Fig. 4).

The original materials, structure and technique

The materials and structure of the tabernacle were analysed microchemically and by X-ray diffraction (4). 101 cross-sections of the polychromy were prepared.

1) Giorgio Vasari, *Le vite de più eccellenti pittori scultori ed architettori scritte da Giorgio Vasari pittore aretino*, ed. G. Milanesi, Florence 1878-85, IV, p. 523: «Furono suoi discepoli... Lionardo del Tasso fiorentino, che fece in Santo Ambrugio de Firenze sopra la sua sepoltura un San Bastiano di legno, e la tavola di marmo delle monache di Santa Chiara ».

2) K.B. Neilson, « *A Pair of Angels by Filippino Lippi* », *Art in America*, (1934), pp. 96-98.

3) Chrome green, found in this decoration, was not produced commercially before the first quarter of the 19th century.

4) The X-ray diffraction analyses were done by Dr. Valerio Malaguzzi, Florence.

The figure of St. Sebastian

The figure is carved in *lime wood*. A remarkable feature concerning the craftsmanship is that the sculpture is composed of about 30 different pieces of wood (Fig. 5). The pieces have been glued together directly without the use of dowelling. Before gluing, the surface has been scratched in cross-pattern to give better grip for the glue. Another striking fact is that the different pieces of wood often have been badly fitted together leaving relatively broad gaps – 1,5 cm has been noted – between the pieces. These gaps were originally closed with a *filler* composed of calcium carbonate (crushed marble?), saw dust and glue (Fig. 6).

The tree trunk is cut from one piece of wood and attached to the back of the base with two iron nails.

The modelling of the figure has mainly been done by carving the wood. However, in a few places (on both calfs, right thigh and left hip) the plastic form was built up with the filler (maximum thickness observed is 5 mm) (Fig. 7). The filler has been used for building up the main volumes only; more subtle details as curls of hair, fingernails etc. have been carved in the wood.

The figure, base and tree trunk are covered by a thin layer of *gypsum* and glue. Thickness 50-150 μ . This priming has also been used to build up the molded drips of blood (*pastiglia*).

The *medium* in the paint layers seems to be *tempera* throughout.

The paint is covered by a yellowish *tempera varnish* which seems to be original. Maximum thickness 20 μ .

The following *pigments* have been identified in the original paint layers: Green earth, yellow ochre, vermilion, iron oxide red, lead white, carbon black (charcoal?).

Almost the whole figure, except the hair and the part originally covered by the loincloth, is painted in a light yellowish *flesh colour* (Fig. 8). No noteworthy variation in colour or value is found in this layer. The paint consists of one layer of lead white with some vermilion and also some large colourless crystals (neutral lead carbonate?). Thickness 20-30 μ . The original (?) *tempera varnish* acts as a glaze giving the flesh colour a warm yellowish glow.

The flesh colour also covers the eyes, lips and blood stains; no original red paint marking the colour of the lips and blood was found, nor could any original drawing of the eyes be discovered. As it could hardly be imagined that these details originally were not accentuated with colour, it was decided to let the first layer of repaint remain on these parts while later additions were cleaned off the rest of the sculpture.

The *brown* on the hair is composed of one layer of iron oxide red and carbon black. Thickness 50 μ .

The whole base is covered by one layer of dark *green* (yellow ochre and carbon black). Thickness 40-70 μ . On top of this layer some modelling is done in lighter green (green earth) and brown (red ochre and carbon black).

The dark green on the tree trunk consists of one layer of carbon black with some yellow ochre. Thickness 40 μ .

The monochrome painting (Fig. 9)

Height: 79.0 cm; width 116,5 cm., thickness of support: 3.0 cm.

The *panel* is put together of 3 horizontal planks of poplar, planed smooth along the edges and glued together. In the lower part of the panel a semi-circular piece corresponding to the

arch has been cut away. Along the back edge of the arch a 2 cm deep ledge has been cut into which the cupola fits. The 13 cm wide frame surrounding the arch has been attached to the front of the panel with iron nails hammered in from the front.

Two heavy vertical planks are affixed to the back of the panel. These planks run along the whole height of the tabernacle and support its other main part also. The panel was attached to these planks with 10 iron nails, 5 along each side, driven through from the front. The nail heads are countersunk into the wood and the cavities smoothed out with the filler. Three vertical lines are *incised* into the surface of the panel marking the middle of the arch as well as its maximum width; the lines probably served as guidelines during the sawing of the arch. There is also one incision running concentrically 13 cm above the arch, thus marking the position for the upper edge of the frame.

The panel has a *priming* of a rather unusual structure (1):

1) The wood is covered by a thin layer of whitish, coarse crystals of calcium carbonate (crushed marble?) Medium: animal glue. Thickness 50-100 μ .

2) Layer 1 is covered by a transparent, greyish layer, probably egg white. Thickness 20 μ .

3) The top layer consists mainly of coarse crystals of anhydrous calcium sulphate (anhydrite) and some gypsum. Medium: egg white (?). Thickness 250 μ .

The priming has not been smoothed down carefully: there are visible brushstrokes as well as numerous grains and particles in the surface. The priming extends to the top and to the left and right hand edges of the panel, while the area covered by the semicircular frame has been left unprepared.

The *medium* in the paint layers everywhere seems to be tempera.

The painting was covered with several layers of brownish *varnish*, none of which seems to be original.

The following *pigments* were identified in the paint layers: malachite, yellow ochre, iron oxide red, lead white, carbon black (charcoal), gold leaf.

Excepting the crown and orbs on the pieces of cloth in the angels' hands, the whole painting is done in greyish monochrome. The colours have now a warm brownish tinge, but they seem originally to have been lighter and cooler. The haloes are gilded and the crown is brown with painted green precious stones and highlights in gold.

The painting technique seems to be as follows: on the ground there is a *greyish imprimitura* covering the whole painted surface. In large areas of the figures this imprimitura remains uncovered, thus representing the middle value of the painting. The layer is composed of lead white, some carbon black and traces of yellow ochre (?). Thickness 10-30 μ .

The darker parts of the picture were painted on this imprimitura, i.e. the dark outlines and the main features of the figures and draperies as well as the modelling of the shadows, the toning down of the background etc. The paint is dark *grey-brownish*, semitransparent, containing carbon black, some ochre and much medium. The modelling with this dark paint has been done in the hatching technique typical for Italian tempera paintings.

Finally the *whitish* clouds, highlights etc. were painted with lead white. Thickness 10-50 μ .

The crown was painted on top of the monochrome. The *brown* main colour consists of a mixture of carbon black and iron oxide red. Thickness 10-15 μ .

The pigment in the *green* precious stones is malachite.

1) R.J. Gettens and M.E.M. Rose, *Calcium Sulphate Minerals in the Grounds of Italian Paintings*, « Studies in Conservation », I, (1954), pp. 174-189

The niche, cupola and the front of the tabernacle, excluding the carved frame, have been *primed* with a yellowish layer of anhydrite of calcium sulphate and some gypsum. The medium seems to be tempera (egg white?) Thickness 170-200 μ .

The *medium* in the paint layers seems to be tempera.

The following *pigments* have been identified: Yellow ochre, iron oxide red, lead white, carbon black (charcoal).

The painting technique used for the shell, marble and porphyry imitations in the niche and on the front of the tabernacle seems in principle to be identical to that of the monochrome painting of the spandrels: There is a general *whitish* underpaint (*imprimitura*) covering the whole area. It is composed of lead white, some carbon black and traces of yellow ochre. Thickness 10-80 μ . This layer has been left mostly uncovered in the areas representing marble. Darker lines and shadows indicating the profiled edges of the imitated marble slabs are painted on top of this layer with a dark *grey-brownish* semitransparent paint of carbon black, traces of yellow ochre and much medium. Finally, the highlights have been put in with lead white.

The *reddish* paint in the porphyry areas consists of one layer of iron oxide red, some lead white and traces of carbon black. Thickness 10-70 μ . The reddish paint lies on top of the whitish *imprimitura*.

The *yellow* pigment in the horizontal frieze inside the niche is ochre.

Unlike the other parts of the monument, the carved frame has no preparation of calcium carbonate, calcium sulphate anhydrite or gypsum: The wood surface has been covered by a thin layer of *glue* (thickness 10-15 μ), then by a layer of *lead white* (thickness 20-80 μ). The lead white, probably meant to imitate marble, has been left uncovered on the protruding foliage and grotesques. The rest of the frame, i.e. the flatter parts, has been *gilded*. The mordant used is glue and some gypsum (?) (thickness 10 μ) on top of which lies the gold leaf (thickness 2-3 μ ?).

The reason for the frame not having been properly primed must probably be sought in the delicate quality of the carvings. An ordinary gesso inevitably would have covered up some of the finer details, while the thin glue/lead white layers would only affect the plastic forms to an insignificant degree.

Concluding remarks

The tabernacle is a fine example of a so called *Gesamtkunstwerk* where sculpture, painting and architecture have been fused together into a harmonious whole. It seems to be generally accepted that Leonardo del Tasso was the actual creator of the monument, while Filippino Lippi was only called in to make the paintings (¹). This may essentially be so but as it is well known that the painters of the Renaissance were regularly commissioned not only to make pictures, but also to paint and gild all sorts of furniture and artifacts, it may seem reasonable to assume that Filippino might have been responsible for the decoration of the whole monument. The marked similarity in the painting technique, mentioned previously, between the monochrome painting and the decoration inside the niche and cupola seems to confirm this opinion. Other observations point in the same direction:

1) The distribution of light is essentially the same both in the monochrome and inside the niche: The light and shade modelling of the angels in the monochrome and the modelling

1) Neilson, *op. cit.*, pp. 97-98.

of the shell in the cupola as well as the marble imitation in the niche indicate light coming from the same direction, i.e. diagonally from top left.

2) Fig. 13 shows a section through the monochrome painting and the arched frame. The superimposition of the various layers of priming, glue and paint shows that the chronology of the main working stages was as follows:

- a) The panel used as support for the monochrome was primed.
- b) The arched frame was nailed to the panel, primed with glue and painted white.
- c) The monochrome was painted.

The above mentioned observations, i.e. the similarity in painting technique, the uniform light and shade modelling and the fact that the different stages of work on the monochrome were done alternately with the building up of the polychromy on the frame, all seem to indicate that the pictures and the decoration of the rest of the monument were carried out simultaneously either by the same hand or at least under the direction of one master (1).

State of conservation

Losses

On the sculpture the loin cloth, the last joint of the small finger and nearly the entire third finger on the right hand are missing.

The wood

Parasite attacks have left countless holes all over the monument. Generally this has not seriously weakened the wood, but in some smaller areas (the left shoulder, the back of St. Sebastian and the predella plank) the wood has disintegrated.

There were numerous cracks in the wood, and several joints have opened up. Some of these damages were of earlier date, but quite a number of them must have been caused by the flood. The figure of the Saint especially had suffered from the effect of the water: the glue in the joints had dissolved and the figure had come apart in about 25 pieces (Fig. 5).

The polychromy

The state of conservation varied very much from one part of the monument to the other, mainly due to the variable treatment the different parts had undergone in the past.

1) The fact that the painted architecture has incised preparatory drawings while the monochrome angels and the Annunciation have not is hardly evidence against the theory that one single master was responsible for both the paintings and the poly-

chromy. It seems to have been quite common in 15th century painting to incise only the architectural elements, while for example, the figures were often painted directly without these guiding lines.

On the sculpture the original polychromy was fairly well preserved. There were numerous paint losses all over the figure, but these were generally of small size. Some bigger lacunae, said to have been caused by a flood in the 19th century, were found in the lower part of the sculpture. One particular type of damage had occurred in the areas where the polychromy was lying on the filler: The water had dissolved the glue and caused a great deal of the filler to disintegrate completely (Figs. 6 and 7).

Two kinds of discolouration were found in the flesh colour of the sculpture: 1) Black fuel oil in the flood water had penetrated through cracks and holes in the overpaint and stained the original polychromy (Fig. 8).

2) On certain parts of the figure the flesh colour had darkened. This was particularly striking on the left foot: The five different pieces which made up the calf and leg differed markedly in colour one from the other, some pieces having a brownish hue. This darkening can hardly have been caused by the flood; it seems to be of an earlier date, perhaps due to resins or other substances from the wood having entered the paint layer.

Both paintings were in a neglected state, but they had escaped the destructive redecorations which the rest of the tabernacle-front had undergone. The monochrome was rather well preserved, but the paint had in some parts been exposed to wear. The only significant loss was found in the lower central part where a hole had been drilled apparently to mount a lamp. The roundel, on the other hand, had suffered from extensive flaking, scratching and wear. Both paintings were obscured by several layers of brownish varnish and surface dirt.

The original polychromy on the predella plank and the front supporting the pilasters was almost completely gone; only insignificant traces were left to indicate that these parts originally were painted to imitate red porphyry. The original white and gold on the carved frame was very fragmentarily preserved and this gives the frame a spotty and incoherent appearance (Fig. 14).

Treatment

The restoration aimed at consolidating the original structure of the tabernacle as well as relieving it of the disfiguring later additions.

The cracks in the wood and the open joints were glued together, mostly after having been strengthened with dowels. Some weak areas in the wood were cut away and replaced with fresh wood. Where the filler had disintegrated it was as a rule replaced with pieces of new wood.

A general impregnation of the polychromy on the figure of the Saint and the paintings was done with a mixture of beeswax and dammar resin. Some local fixing was also done with soluble nylon or with rabbit skin glue in water.

The paintings were cleaned with a mixture of dimethylformamide and Shell Sol A.

The overpaint on the sculpture was removed mechanically, in some areas after having been softened with a paint remover. Some of the dark fuel oil in the flesh colour could be extracted by xylol mixed with aluminium oxide as an absorbant; a treatment which partly eliminated the spotty appearance of the flesh colour.

The two secondary decorations on the carved frame were taken off with a paint remover and pyridine; the non-original gesso was softened with water and alcohol and removed mechanically.

Finally, the problems concerning the presentation of the monument, i.e. to what extent the damages should be retouched, were considered. The fact that the original decoration on most of the monument was preserved nearly intact while the polychromy on the carved frame and the front of the tabernacle was in a very fragmentary condition, presented difficulties.

Originally the tabernacle was completely decorated to give the impression of being made of porphyry and marble (the grisaille painting was possibly meant to imitate a marble relief). The present state of conservation with conspicuous parts, such as the carved frame, left with the bare wood almost completely exposed, destroyed the illusion that the work was made of stone. Further, the tone values of the monument were also out of balance. Originally the white and golden frame must have been the brightest element of the tabernacle, the function of the frame being to separate visually the central niche from the rest of the monument and draw the attention to the figure of the Saint. In its present condition the frame ranks among the darkest elements, its tone value being very close to that of the predella and the rest of the tabernacle-front.

The above mentioned circumstances engendered the possibility of reconstructing the polychromy on the frame. Some reconstruction tests were made, but it was finally decided to leave the frame in its actual condition with only some toning down of the white spots to match the wood colour (Fig. 1).

On the other hand it was decided to integrate the holes and losses in the paintings and in the polychromy of the sculpture and the niche. The lacunas were filled with putty, under-painted with tempera and glazed with oil colours.

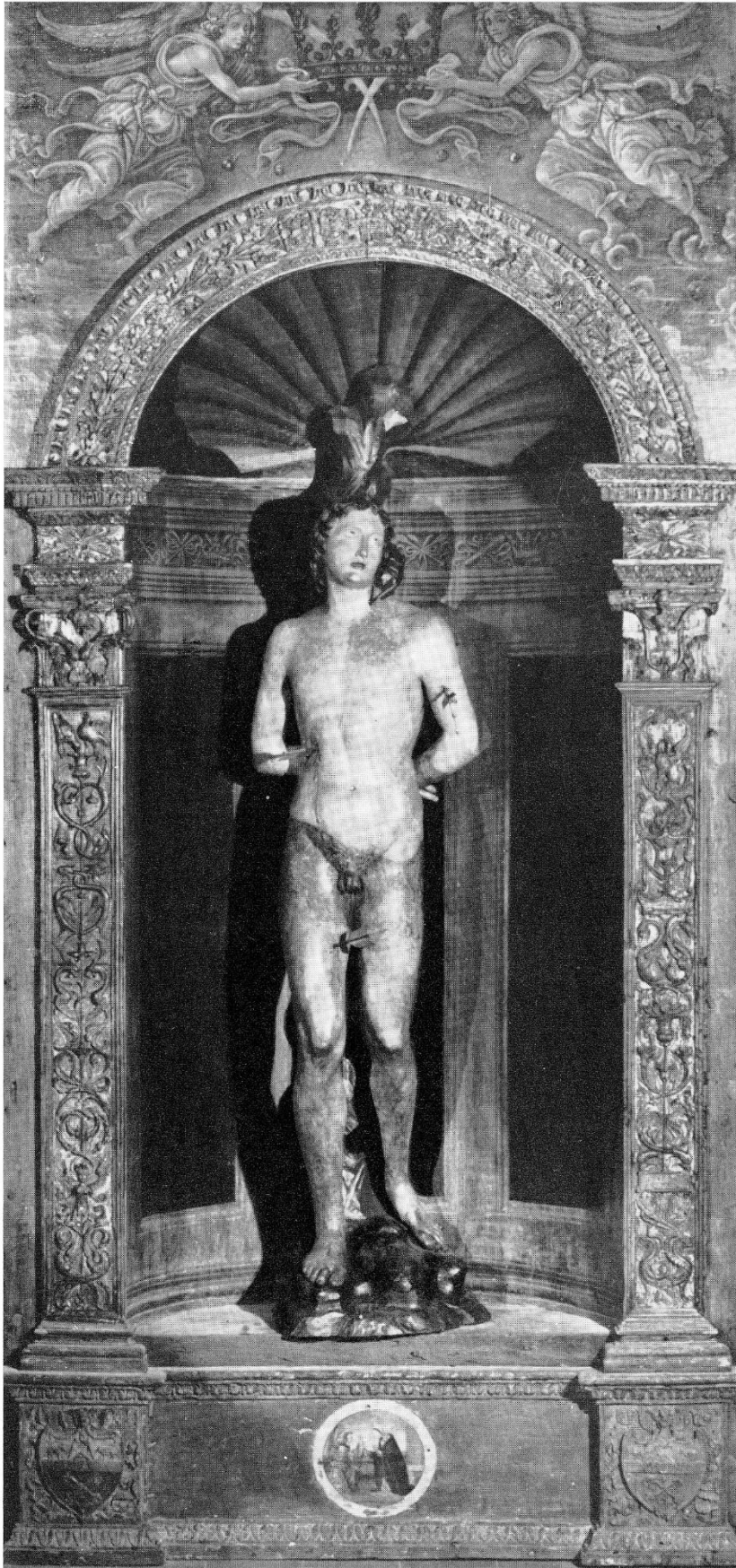


FIG. 1. - Leonardo del Tasso: The St. Sebastian tabernacle. Paintings by Filippino Lippi. After the treatment of 1967-70. (Photo: Soprintendenza alle Gallerie, Florence).

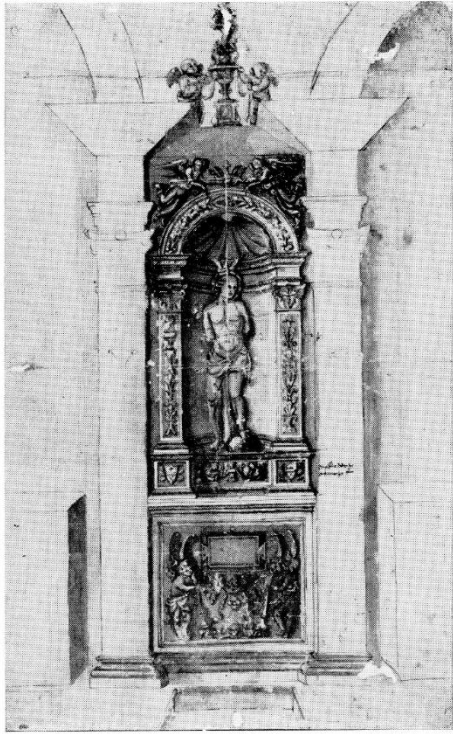


FIG. 2 – Drawing believed to be the sketch for the monument (Photo: Louvre, no. 1328).

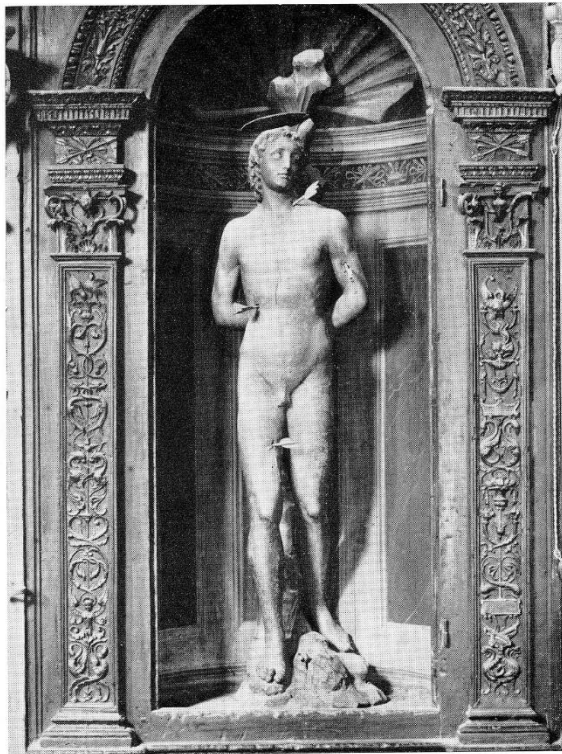


FIG. 3 – Condition about 1890 (Photo: Brogi no. 9916)

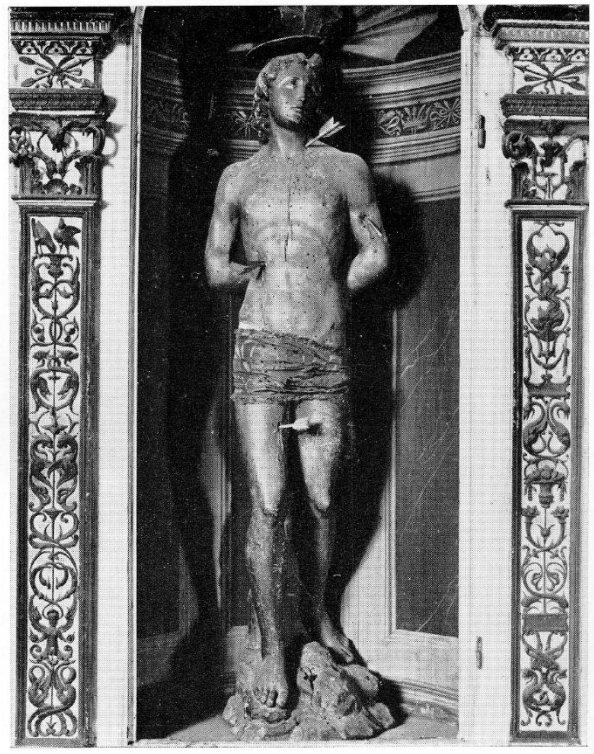


FIG. 4 – Condition about 1910 (Photo: Alinari no. 2027).



FIG. 5 - The sculpture after the flood 1966. (Photo: Bertoni no. 1461).



FIG. 6 - The left forearm. The filler in the gap between two pieces of wood partly disintegrated. (Photo: Nordic center for restoration in Florence).

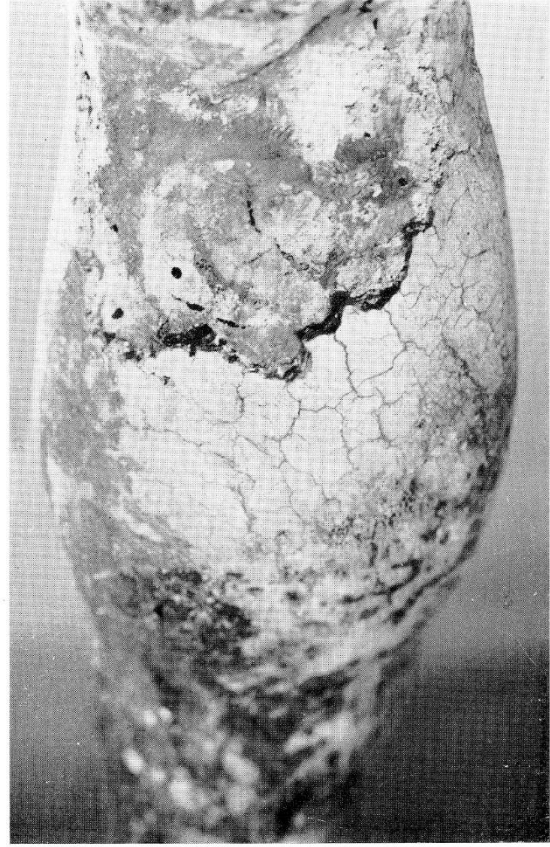


FIG. 7 - The right calf before restoration. The filler has disintegrated in the upper part. Photo: Nordic center for restoration in Florence).



FIG. 8 - The legs during restoration. The repaint removed in the upper part. The black fuel oil stains can be seen. (Photo: Nordic center for restoration in Florence).

Fig. 9 - Filippino Lippi: The monochrome. After treatment. (Photo: Nordic center for restoration in Florence).

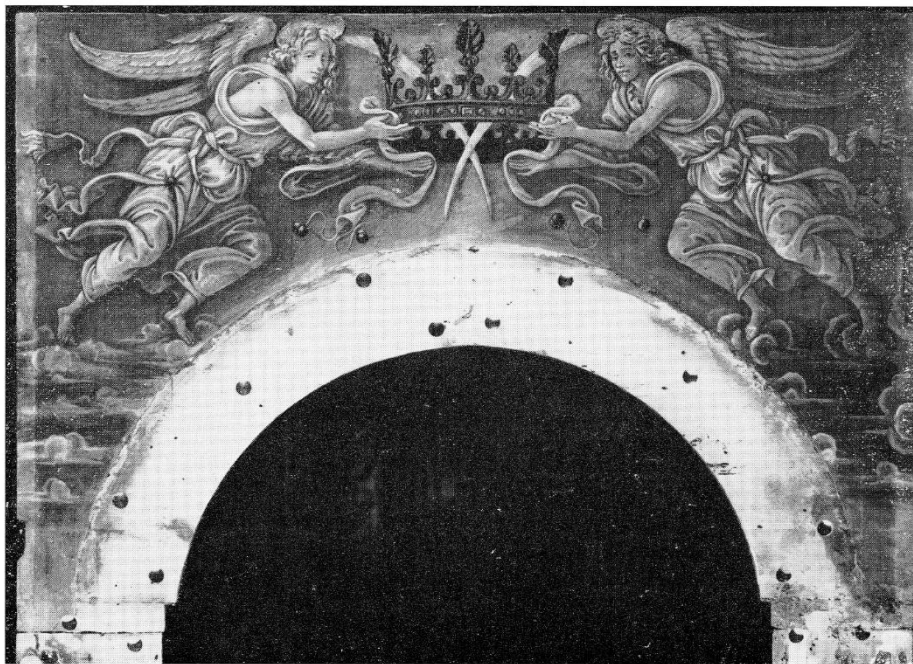


Fig. 10 - Filippino Lippi: The Annunciation. After treatment. (Photo: Nordic center for restoration in Florence).



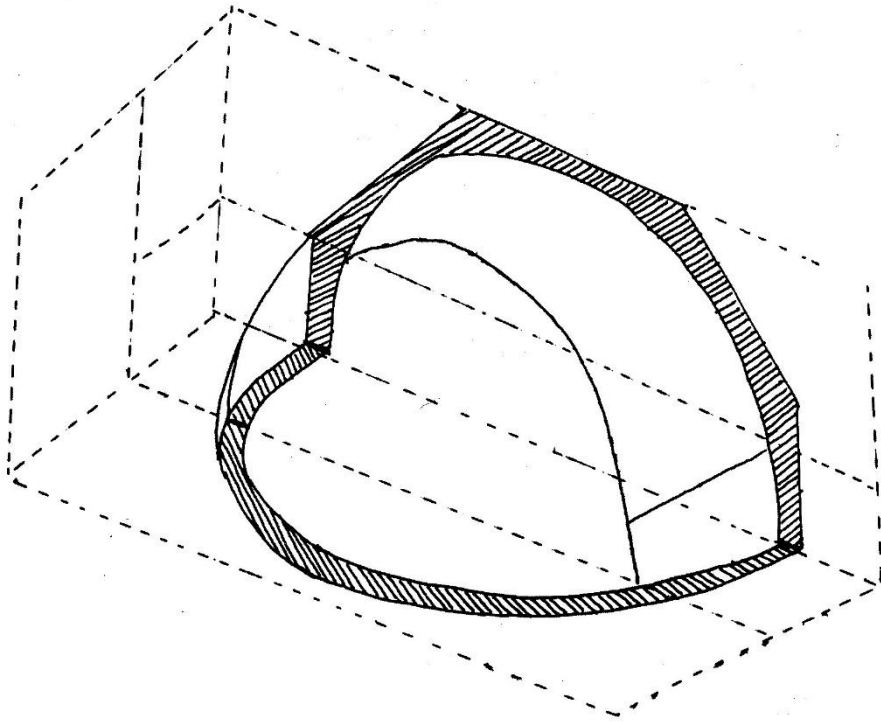


FIG. 11 - Sketch of the cupola.

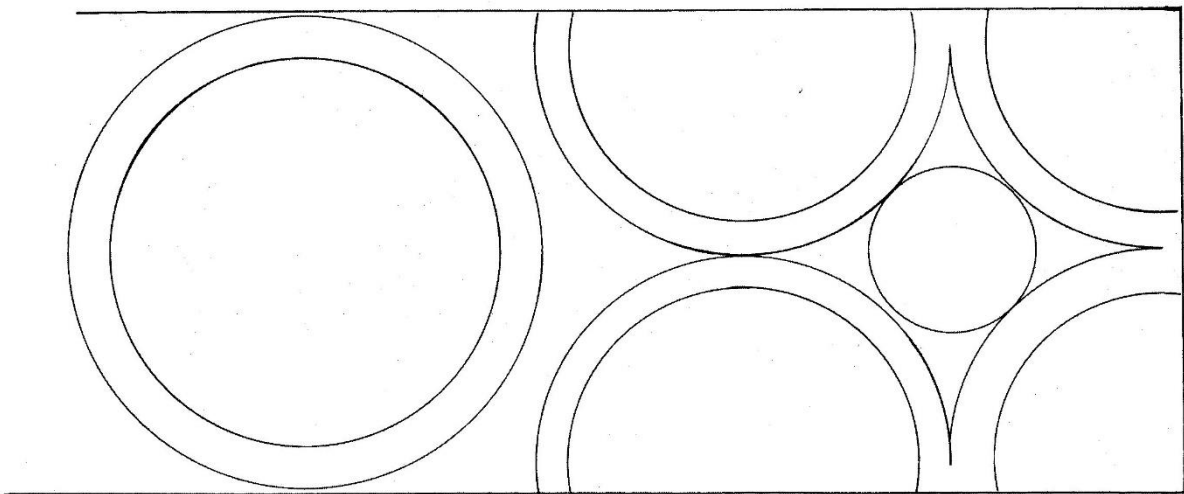


FIG. 12 - The right hand side of the predella showing the pattern of the incisions.

- 1 Calcium carbonate
 - 2 Egg white?
 - 3 Calcium sulphate (anhydrite)
- } Preparation for the monochrome
-
- 4 Animal glue
 - 5 Lead white
- } Preparation for the decoration on the frame
-
- 6 Gray paint (the monochrome)
 - 7 Incision in wood

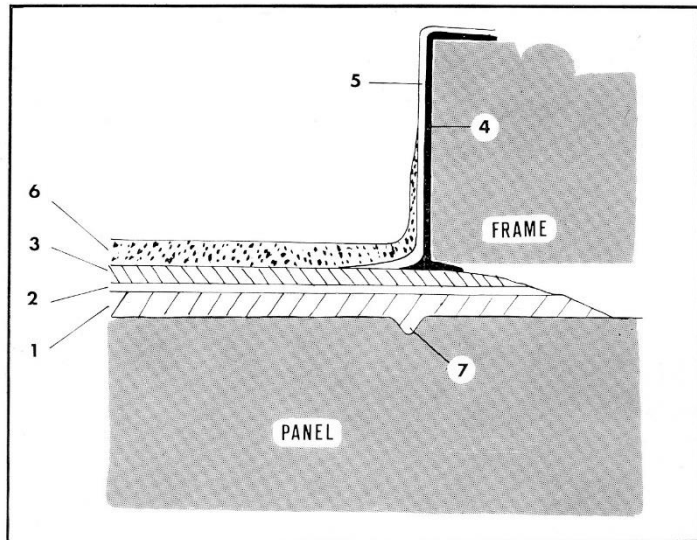


FIG. 13 - Section through the monochrome and the arched frame.



FIG. 14 - Detail of pilaster after cleaning. (Photo: Nordic center for restoration in Florence).

5.3. Neri di Bicci, *Madonna and Child with Sts Catherine of Alexandria and Cristina and a Donor*, 1474. Materials, technique, and restoration.

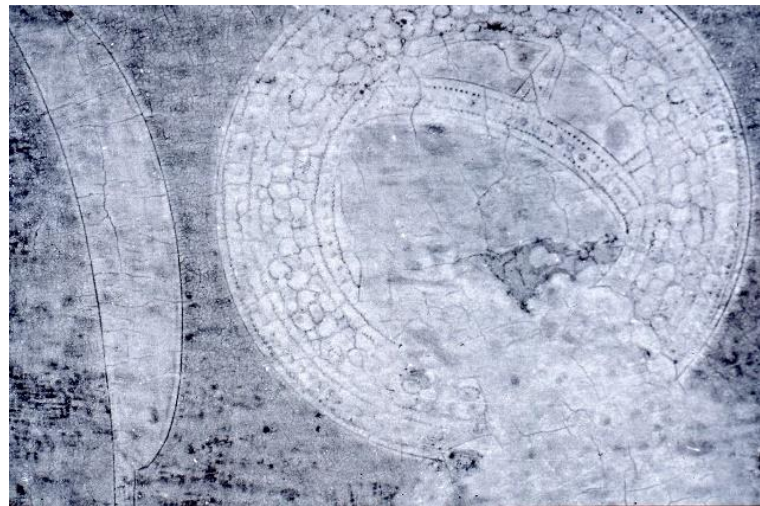
(Reworked from Skaug 1978 and Skaug 2009)



Neri di Bicci (1418-92) was third in line in a well-known Florentine family of painters. The painting was later on identified with a commission of 1474.¹⁴ At the time of the flood it was deposited in the Uffizi from the office of the *Economato dei Benefici Vacanti*. After the submersion a preliminary front protection was put by on by Florentine restorers (left) and the painting brought to the provisional store-rooms in the *Limonaia* in the Boboli gardens for controlled drying. In March 1968 it was transferred to the *Fortezza da Basso* and entrusted to the *Nordic Centre*. The treatment was finished in May 1970.¹⁵

*Summary of materials and technique*¹⁶

The panel (75 x 127 cm) was composed of three horizontal boards, glued together (without vertical dowels), and originally kept together by a fixed frame. Strips of canvas had been glued over joints and knots on the front side before the application of gesso.¹⁷ A sketch of the composition was made upon the ground, apparently with a pen or a metal point, not with a brush. Parts of the composition were incised with a pointed instrument for a variety of purposes, such as the marking of parts to be gilded (haloes, crown and dress borders), as guiding lines facilitated by the use of a ruler (throne, books), or as a means to retain the design throughout painting processes in several layers (Madonna's blue robe).



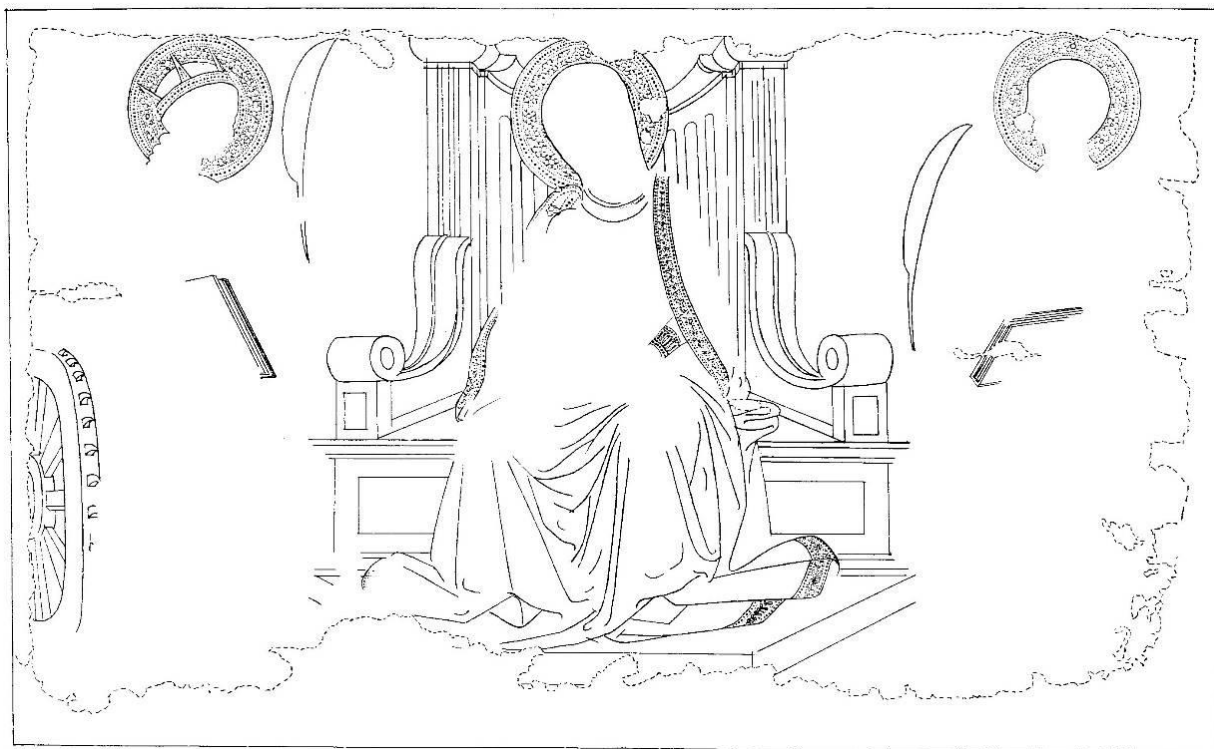
Detail of St. Catherine, front and reverse during transfer. Palm leaf, concentric halo lines, and crown were incised at the initial stage as part of the preparatory design. Tooled ornaments in the gilding were made later on. See tracing of the incisions on the next page.

¹⁴ Bruno Santi, *Neri di Bicci. Le Ricordanze*, Pisa 1976, entry 784, pp. 421-22. Santi conveyed his identification in a letter to the author 11.09.1981. The Saint to the right was formerly thought to be Margaret, see Skaug 1978.

¹⁵ The painting was later on lent permanently to the *Pinacoteca Nazionale di Siena*.

¹⁶ Analyses by Unn Plahter, the author, and Steen Bjarnhof, respectively. 25 cross-sections were made, and micro-chemical tests and X-ray powder diffraction analyses carried out. A few IR details were made of the underdrawing.

¹⁷ See p. 46, note 25 below.



The gilding is imitated gold, not silver with a golden glaze but a two-layer metal leaf to be interpreted as ‘part gold’ (*Zwischgold*, later on identified by the author as Cennino Cennini’s *oro di metà*).¹⁸ Pigments found were ultramarine, azurite, verdigris(?), lead-tin yellow (type I), yellow ochre, vermilion, transparent organic red, bole, white lead, and black charred matter. The binding medium seems to be egg tempera throughout.

Six principal colour structures were studied, one blue, two green, two red and the flesh colour. The various systems of superimposed layers could be grouped according to two opposite main principles. One system depends on light, opaque underpaintings modelled with darker glazes, occasionally with an overall glaze to intensify the local colour. The other system is typically to be found in the fleshy parts, the modelling proceeding from (pinkish) middle tone to light. In the former system the thickest paint layers are to be found in the darkest parts, in the latter the thickest paint layers are to be found in the lightest parts.

Neri di Bicci must be considered as a conservative artist, popular and with a steady income from commissions. It is perhaps in keeping with his traditionalist idiom that he still used egg tempera in a period with an increasing use of oil. The white-greyish substratum for the pinkish flesh colour instead of green, however, is a break with tradition. Compared to Sandro Botticelli (1445-1510), Antoniazio Romano (1430-1510) and the young Michelangelo¹⁹ this may in hindsight be regarded as a progressive feature. But most such technical changes obviously take place in fits and starts, not as linear, gradual developments.

¹⁸ Skaug 1978: see Unn Plahter’s analysis p. 225, n.1; discussion pp. 227-228; and Post Scriptum, pp. 234-235. Plahter noticed that the sample seemed to separate during the treatment with concentrated HNO₃, leaving vestiges of perforated gold. In Santi’s subsequent identification (note 14 above) Neri di Bicci writes that he in fact did use *oro di metà* in this commission. Further studies have shown that Cennino’s *oro di metà* could not be an alloy, as formerly thought, but must be a silver leaf with gold on top, elsewhere known as *Zwischgold* etc., see E. Skaug, «Cenniniana. Notes on Cennino Cennini and his Treatise», *Arte Cristiana*, 754/1993, pp. 15-22 and subsequent papers. This has been widely accepted, among others in recent editions of Cennino, see Fabio Frezzato, *Cennino Cennini. Il libro dell’arte*, Vicenza 2003, pp. 21; 132-33, n. e; 303-04, and Lara Broecke, *Cennino Cennini’s il Libro dell’arte*, London 2015, p. 16, n. 6; pp. 130-31, n. 6.

¹⁹ Skaug 1978, p. 229. See Michael Hirst and Jill Dunkerton, *The young Michelangelo*, London 1994, pp. 36 and 83 ff.

State of conservation

The panel was heavily attacked by parasites and in a state next to collapse. During a previous restoration, perhaps in connection with a cradling, parallel groves had been sawn into the back at intervals of about 3 centimetres, which further reduced its mechanical strength. When the painting was entrusted to the Nordic Centre it was resting on a bed of wet sawdust and wrapped



in PVC foil in order to prevent it from contraction upon drying.

The ground was powdery and fragile, with losses of older date mostly along the edges. During a previous restoration the losses had been filled with a putty consisting of chalk and oil(?), mixed with red, blue and brownish pigments roughly according to the colours of the missing areas. The putty covered large parts of the original paint.

The strong expansions and contractions during and after the submersion had caused cleavages between support and ground and between the different layers of the ground, but apparently not between ground and paint. Numerous blisters had formed all over the painting, but the preliminary front protection had efficiently prevented new losses during the period of slow drying in the *Limonaia*.

The painted surface had in some parts suffered from previous cleanings. A few rectangular cleaning tests appeared to be of a more recent date and could be seen in a photograph made before the flood. These tests did not seem to have touched original paint. The numerous blisters all over the painting were evidently confined to those developed in the ground layers, whereas the adhesion between ground and paint seemed to be good. The paint film itself appeared to be tough and relatively elastic.

Restoration

The great number of blisters all over the painting and the hopeless condition of panel and ground made a transfer – *trasporto* – the most realistic option. The procedure followed the one developed by the Florentines and was carried out in close collaboration with them. The principle is simple: a facing is attached in order to secure the paint layer, the painting is turned face down, support and ground is removed, and the remaining paint layer transferred to a new support.

Prior to that, however, the provisional front protection put on immediately after the flood, consisting of tissue paper and the acrylic resin Paraloid B-72 (see p. 33, top), had to be removed, and a consolidation of the paint layers carried out. During these two operations, which had to take place simultaneously, certain complications arose. The slow loss of moisture caused the panel to contract with a continuous formation of new blisters, which spoke for the painting to remain on its bed of wet sawdust. This was successful, but was abandoned because of strong mould attacks which developed in spite of repeated sprayings with thymol. A different



procedure was then employed, shown with Lone Bøgh (DK) and the author to the left. Every morning, the back of the panel was sprayed with water from an electric spray gun. Cups with hot water were placed under the panel and changed at intervals during the work. At the end of the day the painting was sprayed once more and laid down on the cool brick floor, which had previously been moistened. The panel was surrounded with cups of hot water and covered up for the night by a low tent of PVC foil. Owing to the condition of the support the painting was handled on a stretcher during this stage of treatment.

However, the swelling of the panel thus achieved could not fully compensate for its continuous loss of volume. The plastic deformation (stretch) in the paint layer caused by the flood could not be reversed by simply putting down all the blisters by a heated spatula and glue, nor by prolonged light pressure with weights. The largest blisters were instead, as a preliminary measure, reinforced with glue and supported internally by gesso filled from a syringe. Further attempts at flattening were postponed to after the transfer. Similar solutions were aimed at where the blisters had collapsed. The fragments were put together as a jig-saw puzzle and built up to vault-like shapes, supported from inside with gesso.



As mentioned above this process went parallel with the removal of the preliminary front protection. A general difficulty was that its binder, the Paraloid B-72, in spite of its alleged stability, turned out to become less soluble with time. Swabs soaked in xylene, with increasing proportions of methyl-ethyl-ketone, were applied to the surface and covered with aluminium foil. After 10-12 minutes the resin had dissolved and in part been absorbed in the cotton, and the facing loosened. Another difficulty during the fixation of the paint layers was the partially failing effect of the rabbit skin glue, tentatively attributed to their presumed content of a greasy substance such as the fuel oil mixed with the flood water. Repeated washings with xylene, toluene and methyl-ethyl-ketone, alone or mixed with cellulose powder to an extraction paste, finally made the glue stick.



The brown overpainting on the floor as well as other old overpaints and fillers were removed by means of Pyridine in a wax paste, and the losses filled in order to create a coherent surface.



Transfer

The transfer facing, applied by Edo Masini, consisted of two layers of tissue paper with Paraloid B-72, in overlapping squares of about 10x10 cm. The second layer was applied after three days' drying of the first. Upon this was attached a thin gauze canvas embedded in gesso (slaked gypsum in rabbit skin glue) applied in one session. A thin layer of gesso was rubbed well into the Paraloid/tissue paper surface, the canvas put on, and a final coat of gesso applied.

The facing was allowed to dry for one week. The painting was then turned face down and clamped to the table with a thin foam rubber mattress underneath. Most of the wood was shaved down by means of an electric plane which produced a minimum of vibrations, and the rest removed manually by gouges. Below Dorrit von Arronet (S) at work.



By means of a scalpel and light moistening the ground was thinned down to a semi-transparent skin. This thin layer of ground adhered well to the paint layer and was judged to provide a better grip for the new ground, subsequently to be applied, than a completely exposed reverse of the pictorial layer. In the gilded areas the ground was left somewhat thicker in order to keep intact the relief of the tooled and punched decorations (p. 33 above).

At this stage blisters and irregularities were flattened out, sometimes after further local thinning of the ground. By local moistening of the original ground and of the facing underneath, followed by application of local and total pressure for up to several days, certain improvements were achieved. The final perfection of the surface was left to a later stage.



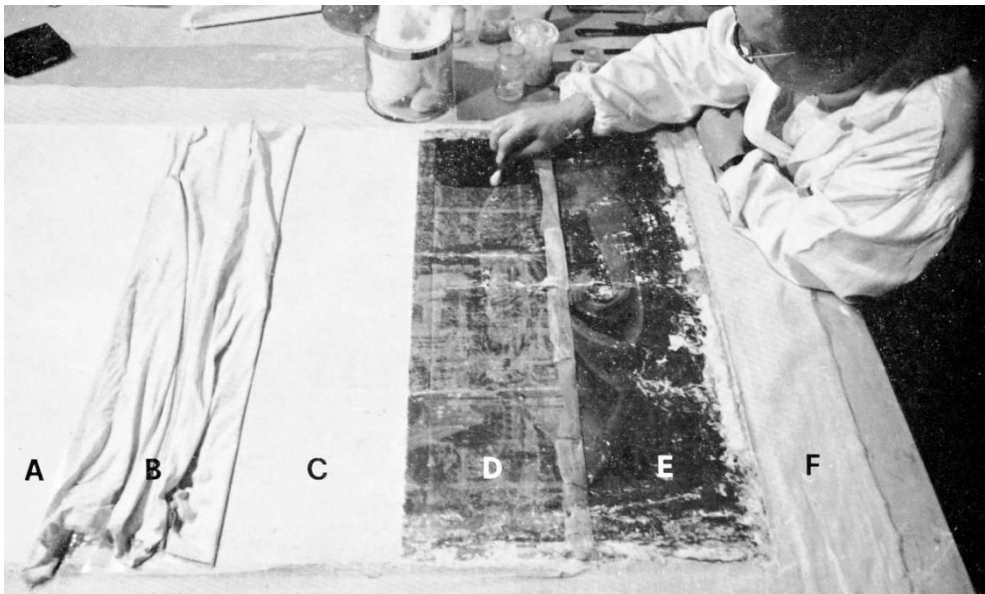
The new support was, as preferred by our Florentine colleagues, a canvas embedded in gesso, i.e. the same structure as the transfer facing. It may be argued that a panel painting should be transferred to a rigid support. On the other hand it was considered that future treatments may, quite generally, be simpler to perform on a canvas support. The thin gauze was also considered to have a negligible tendency to produce new and foreign crackle patterns in the painting.



After a treatment of the reverse of the painting with a diluted mixture of oxgall and rabbit skin glue to improve the adhesion, the new ground – made of well-slaked gypsum (“gilder’s gesso”) in rabbit skin glue – was applied. A little oxgall, molasses, and thymol was added, plus some pigment (ochre and burnt umber) in order to reduce the perhaps too bright aspect of the new ground. Overseen by Gaetano Lo Vullo, the new ground was rubbed into the reverse with a brush of medium stiffness, and the canvas – washed and stretched in advance – was rolled on, followed by a coat of gesso. Areas of about 20-30 cm, in the full height of the picture, were covered at a time in one continuous operation.



Finally strips of wood were put over the protruding parts of the canvas on all four sides and held in place by weights during drying. After one week the painting was turned face up, and the transfer facing removed step by step. Mogens Larsen (DK), founder and long-time editor of



NKF's journal *Meddelelser om Konservering* – discussing the procedure with Lo Vullo and an English colleague above – took care of this operation.

Removal of the transfer facing. A = gesso, B = gauze canvas, C = gesso, D = double layer of tissue paper with Paraloid B-72, E = painting, F = protruding part of gauze canvas of new support.

Final treatment (spring 1970)

Low pressure treatment by means of a hot-table, a method introduced in Florence after the flood (see p. 67 below) was employed in order to improve the pictorial surface and to ensure the adhesion between the painting and the new support. A beeswax/dammar solution (7 : 3) in white spirit was applied to the painted side and the painting treated under moderate pressure and heat, first face up and then face down. The final result was obtained by moistening the back and treating the painting face down under a pressure of 0,2 kp/cm² at 45°C for 10 minutes. The painting was then dried on the hot-table by putting blotting paper in-between the back and vacuum rubber cloth. Initial pressure 0,2 kp/cm², and when a temperature of 50°C was reached the pressure was raised to 0,4 kp/cm² for 10 minutes. A rubber mat of 3 mm thickness was used between painting and hot-table during treatment.

The back was evened out with a filler and sandpapered, then brushed with oxgall. A lining on linen canvas, in traditional manner with glue and warm irons, was finally done by the Florentine restorers. The painting was mounted on a laminated panel by tacking along the edges.

The extensive losses along the edges gave the painting the character of a large fragment. All the losses within this area were retouched in order to match the original perfectly, after attempts with «neutral» systems proved unsatisfactory. Two exceptions were made, the cheek of St. Catherine and the profile of St. Cristina, where too much was missing to give a basis for reconstruction. The losses along the edges were toned down with a brownish-grey colour. Much more was missing along the bottom than along the top. As an adjustment of the optical balance the Florentine authorities recommended to mount the picture a little lower within the original dimensions. Such a change is of course open to discussion but will, like the other interventions, be available in the records.

Regrettably, a full shot photograph of the painting after restoration has not been possible to obtain.

*

NOTE

As mentioned above, the material presently preserved in the OPD archives were kindly put to the author's disposal in July 2016. However, the complete written reports on condition and treatment – with analyses, cross-sections and photographic documentation in black and white and colour, left at the end of the project in 1970 – were not found. What was found were black and white prints, a few analyses and two summary notes on the treatment. Owing to circumstances during the re-organisation of the Florentine restoration department in 1975 (cf. also above), our archives may in some way have been split up.²⁰ Apparently the material is not lost, but the time did not allow further search for it.

The entries below have to some degree been reconstructed from the black and white prints found in the OPD archives. A selection of them were scanned with the kind permission to reproduce them in the present publication. Moreover, the author had a few private colour slides from his period in 1968-69. Brief information on the artists and the works have been added from other sources.

More works than those listed below might have been included. Our chemist did a comprehensive analysis of materials and technique in Ghirlandaio's mural cycle in the Sassetti chapel in Santa Trinita in connection with its restoration by the Florentines. From memory can be mentioned our treatment of a small 17th-century copy of the 'Most Holy Annunciation' in the church of Santissima Annunziata (according to the legend finished by an angel when the artist allegedly fell asleep during the work), a pair of carved *sportelle* from the church of Santa Maria Maddalena dei Pazzi, and a polychrome *consòlle* presumably from the original 15th-century *Tribuna* in the Uffizi.

²⁰ Suggested by Soprintendente Marco Ciatti during conversation in July 2016. Dr. Ciatti took over his present position in 1984.

5.4. Unknown artist, *Madonna del giglio*, c.1500. Church of San Giuseppe, Florence. Examination and treatment.

(Alluvione No. 411)

The painting was entrusted to the Nordic Centre in the spring of 1968.²¹ The preliminary front protection, put on after the submersion (below), was partially removed for samples to be prepared for analysis.

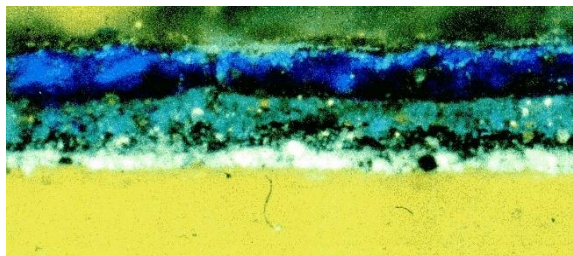


Painting materials and technique

The paint structures are shown in the cross-sections on the next page. A brief summary of the analytic results in the same report:

Blue pigments: ultramarine (lapis lazuli), azurite, smalt. *Greens:* green earth(?), malachite(?), Cu-pigment for glazes (verdigris?). *Yellows:* Naples yellow, ochre. *Reds:* vermilion, organic red. White and black pigments were not analysed.

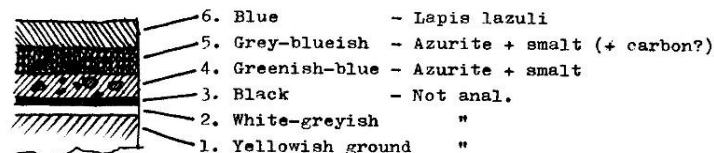
Solubility tests of the *media* suggests a drying oil (rapid disintegration in 10 % KOH) for most of the painting, possibly with a tempera added. The Madonna's blue robe, with its strong swelling in water, indicates a



tempera medium perhaps containing a gum. The thin black preparatory layer, visible in the micrograph above (layer 3 in the sketch to the right), is painted in oil.



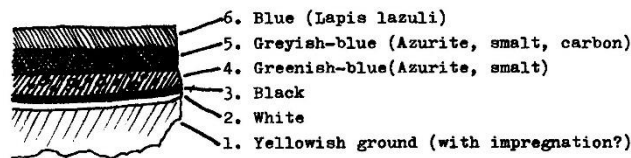
BLUE. Sample taken from Madonna's blue robe with a structure similar to cross-section 381/1:



6. Blue: Bleaches in dil.HCl. Indicates Lapis lazuli.
 5. Grey-blueish: }
 4. Greenish-blue: } Some particles dissolved under effervescence in dil. HCl, indicating a carbonate. Reddish envelope developed by addition of $K_4Fe(CN)_6$, showing presence of Cu. Indicates Azurite.
 Other particles precipitated without colour change. The blue colour still unaffected after being heated in turn with conc. HCl and HNO_3 . Indicates Smalt.

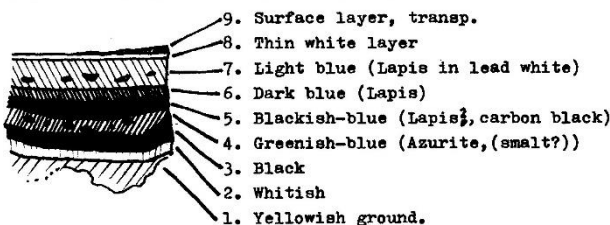
²¹ This entry is based on a private copy of the author's analysis of 1968/69 plus a few colour slides, and on the Nordic Centre's black and white prints found in the OPD archives in July 2016.

381/1 BLUE robe of Madonna.



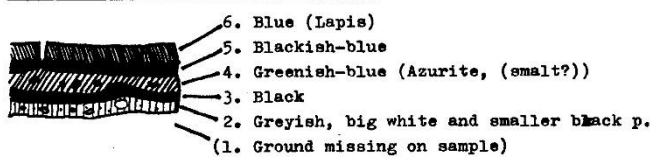
6. Blue (Lapis lazuli)
5. Greyish-blue (Azurite, smalt, carbon)
4. Greenish-blue (Azurite, smalt)
3. Black
2. White
1. Yellowish ground (with impregnation?)

457/2 BLUE robe of Madonna (highlight).



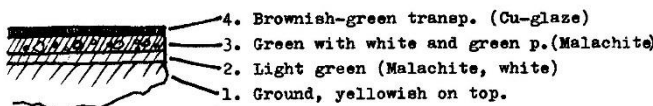
9. Surface layer, transp.
8. Thin white layer
7. Light blue (Lapis in lead white)
6. Dark blue (Lapis)
5. Blackish-blue (Lapis, carbon black)
4. Greenish-blue (Azurite, (smalt?))
3. Black
2. Whitish
1. Yellowish ground.

458/3 BLUE robe of Madonna (shadow).



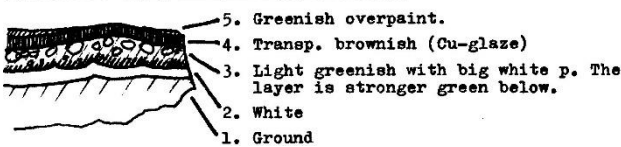
6. Blue (Lapis)
5. Blackish-blue
4. Greenish-blue (Azurite, (smalt?))
3. Black
2. Greyish, big white and smaller black p.
1. Ground missing on sample)

459/4 GREEN from the edge of cupola.



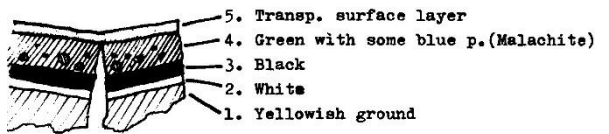
4. Brownish-green transp. (Cu-glaze)
3. Green with white and green p. (Malachite)
2. Light green (Malachite, white)
1. Ground, yellowish on top.

467/11 GREEN, inside of Madonna's robe.



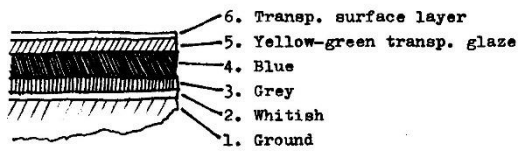
5. Greenish overpaint.
4. Transp. brownish (Cu-glaze)
3. Light greenish with big white p. The layer is stronger green below.
2. White
1. Ground

468/12 GREEN, inside of Madonna's robe.



5. Transp. surface layer
4. Green with some blue p. (Malachite)
3. Black
2. White
1. Yellowish ground

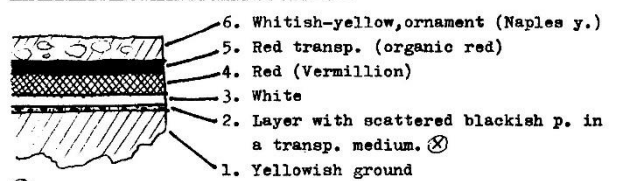
501/13 GREEN, inside of Madonna's robe (lower part).



6. Transp. surface layer
5. Yellow-green transp. glaze
4. Blue
3. Grey
2. Whitish
1. Ground

The markedly different structure of this green in the lower part of the robe (appearing at three different places) might be due to pentimenti or sim.: The grey (3) corresponds to the floor. The blue (4) is from Madonna's blue robe, and the the green colour is obtained by a final glaze (5).

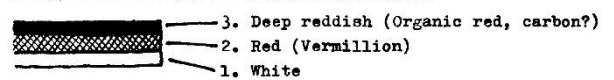
460/5 RED, Madonna's right sleeve.



6. Whitish-yellow, ornament (Naples y.)
5. Red transp. (organic red)
4. Red (Vermillion)
3. White
2. Layer with scattered blackish p. in a transp. medium. (X)
1. Yellowish ground

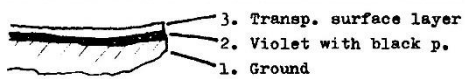
(X) Microscopic examination on the painting confirms the presence of the layer. A preparatory drawing in grey wash?

466/10 RED, Madonna's dress (shadow part).



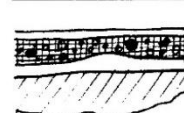
3. Deep reddish (Organic red, carbon?)
2. Red (Vermillion)
1. White

463/7 VIOLET, inside of cupola (shadow part).



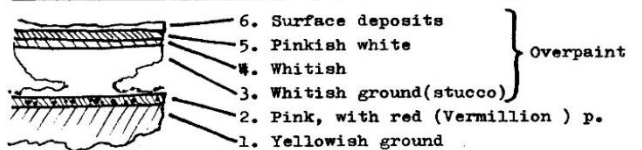
3. Transp. surface layer
2. Violet with black p.
1. Ground

462/6 VIOLET, inside of cupola (highlight).



4. Transp. surface layer
3. Pinkish violet, with white, black, and transp. red p.
2. White
1. Yellowish ground

464/8 CARNATION, front of Madonna (with overpaint).



6. Surface deposits
5. Pinkish white
4. Whitish
3. Whitish ground (stucco)
2. Pink, with red (Vermillion) p.
1. Yellowish ground

Comments.

The cross-sections show everywhere (except in the cupola and the flesh colour)²² a white layer over the ground, apparently to eliminate the yellowish darkening of the upper part of the ground. This discolouring is probably due to an impregnation, i.e. an isolation reducing the absorbing properties of the ground and providing an even surface for the subsequent paint.

The build-up of the Madonna's blue robe, and in an aqueous medium, is characteristic for the semi-transparency and relatively weak covering power of the expensive ultramarine/lapis lazuli. The thin black underlayer (layer 3), followed by the greenish-blue (4) of cheaper pigments allows the brilliance of pure ultramarine on top. The shadows are underpainted in blackish-blue instead of mixed with the blue (layer 5, 458/3), and the highlights are applied as scumbles on top, possibly glazed over (layers 7-8-9, 457/2).

²² The absence of the white layer in these samples may be due to an uneven application of the white and the general limitation of point examinations.

Florence, 1968/69

Erling Skaug

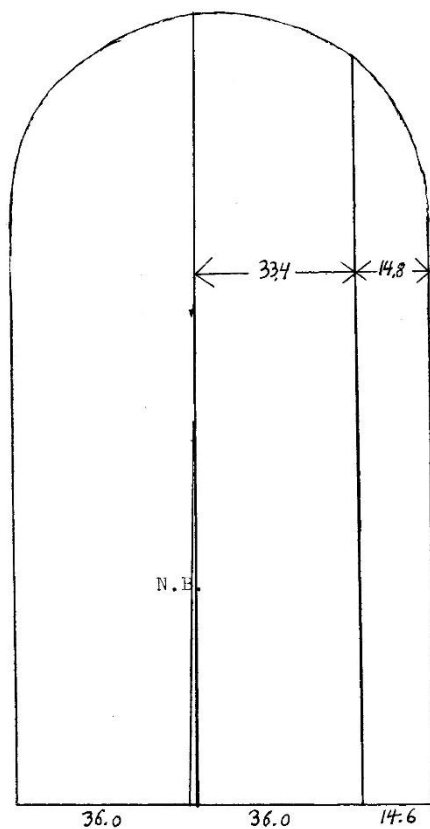
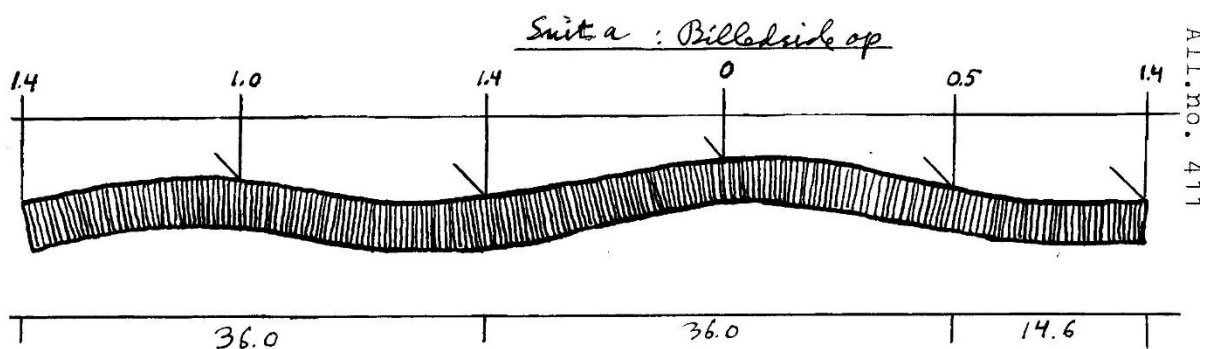
**CENTRO NORDICO
DEL RESTAURO**
Soprintendenza alle Gallerie
Gabinetto Restauri
50100 FIRENZE

Other structures show how the artist has taken advantage of the oil medium's possibility, with a middle tone of the local colour as a basic layer glazed with an intensifying transparent layer on top. Examples are the green of the cupola (459/4) and of the lining of the Madonna's blue robe (501/13), and the red of the Madonna's right sleeve (460/5) and dress (466/10).

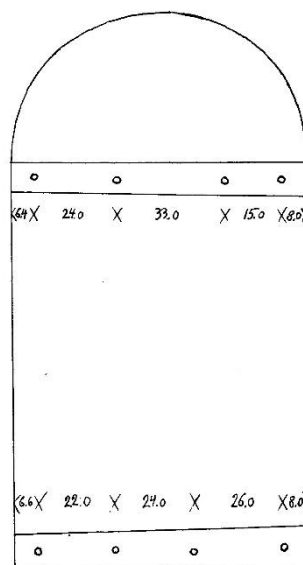
The presence of a preparatory drawing, visible as scattered blackish particles in a transparent medium (layer 2, 460/5), was in fact confirmed as a sketch of the whole composition made with a brush, revealed when the ground subsequently was removed during preparation for transfer (pp. 47-48 below).

Support

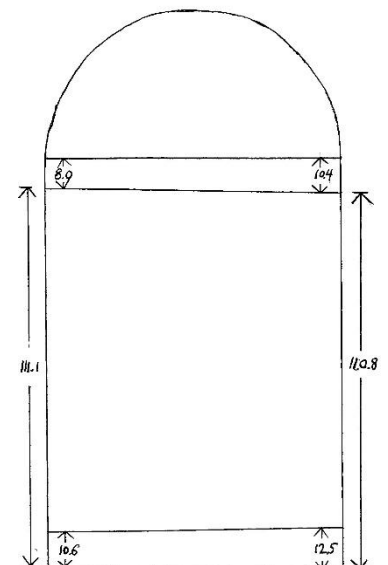
The panel had warped irregularly upon drying (painted side up in the diagram below). The plastic deformations of the wood were considered beyond the point of no return. Blisters in the paint layers had formed as a consequence of the behaviour of the support and its construction.²³



In a split between the two broadest boards, in almost half of the height of the painting, the wood had shrunk (marked "N.B." in the sketch to the left).



Indfalsringer og trædyler.



Ommaalning for transport af pladens bag

²³ The drawings and analysis of the support were made by Steen Bjarnhof.



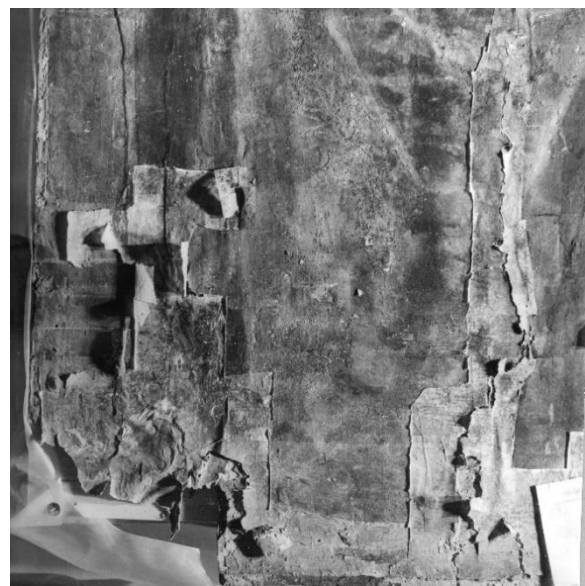
At an earlier point of time grooves had been sawn into the back of the panel, parallel with the fibres of the wood, a traditional attempt to return a painting to its flat state which demonstrates that the irregular warping had been a problem for a long time. It was decided to transfer the painting, with the required preparations.

Condition and treatment of the paint layers

Serious blisters in the paint layers were forming, in spite of the same measures taken as for the work by Neri di Bicci (entry 5.3) to keep the panel swollen with moisture.



Ola Westerudd (S) and Rune Håkansson (S) in turn at work during the painstaking process of removing the facing and fixing the paint layers.



The condition of the surface shown in details from the upper (left) and lower (right) parts, respectively.

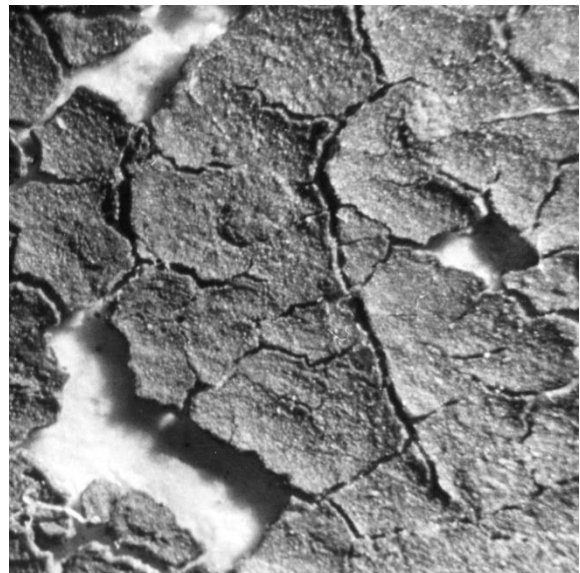
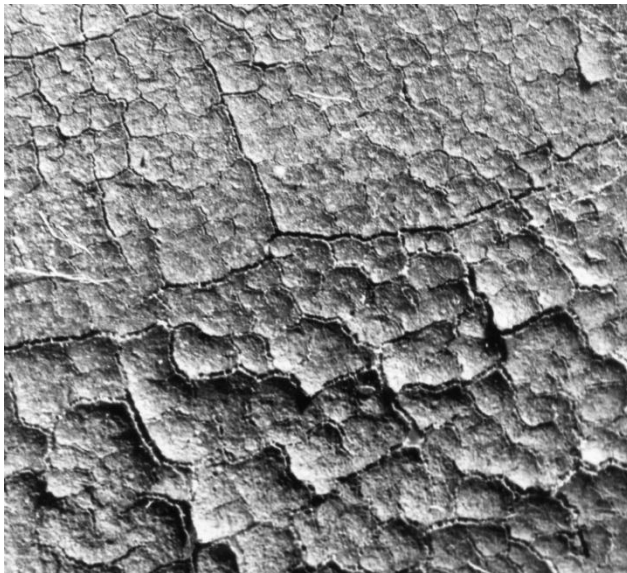
Blisters of small and moderate magnitude were usually possible to put down during the removal of the preliminary front protection. Also the deformations in the face of the Madonna (detail to the right) – the largest ones corresponding with the join between the two broadest boards of the panel – were solved during this stage of the treatment.

As new blisters tended to form all the time this stage inevitably had the character of a sisyphosian race against time.



Next to the Madonna's head a large blister had developed. It was filled with gesso in the way described above (p. 36) and left to a later stage in the treatment.

The Madonna's blue robe was a problem. No adhesive seemed to be able to consolidate the porous paint layer, which refused to stick to its substratum (see surface details below). After unsuccessful attempts with adhesives ranging from rabbit skin glue to resins the application of gum tragacanth²⁴ – according to the analysis (p. 40 above) related to the medium of the blue robe itself – had the combined effect of adhesive and filler.



The fixation of the Madonna's blue robe with tragacanth took place through tissue paper cut to fit the pertinent areas.

²⁴ Proposed by Andrea Rothe, private conservator in Florence, subsequently in charge of conservation at the Getty Museum, USA.



Transfer

After consolidation of the paint layers and filling in of the losses to form a coherent surface (figure to the left), the painted side was covered with a transfer facing of tissue paper and Paraloid-B72 (cf. p. 37).

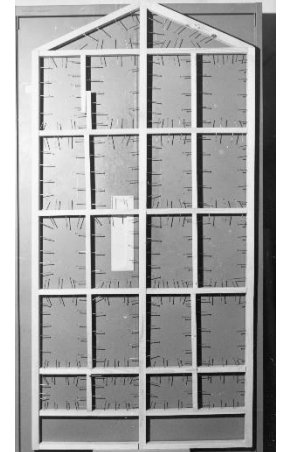
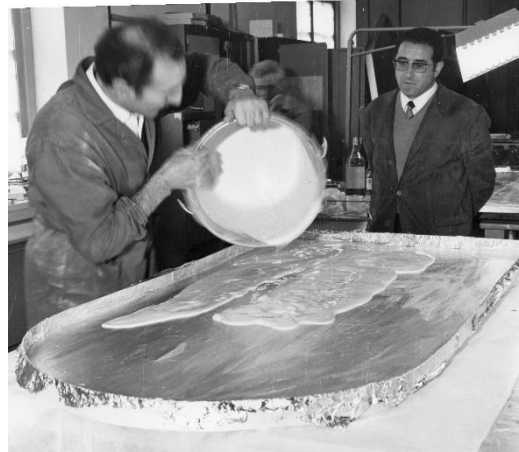
Due to its irregular topography the front had to be protected by a reinforced cast before the painting was turned face down to have its support removed. The procedure was directed by Edo Masini, and attended by Brita Östmar (S) and secretary Bente Thurmann-Nielsen. Left to right below:

A mould was made, by a surrounding frame protruding c.5 cm above the paint surface and fixed to the panel. The surface was covered by aluminium foil, which roughly followed the topography of the surface and secured easy separation afterwards.

A first layer of gesso was poured into the mould.

An armature, studded with nails, was made to fit into the surrounding frame.

The armature was placed upon the first layer of gesso, and more gesso was poured in till everything was covered.





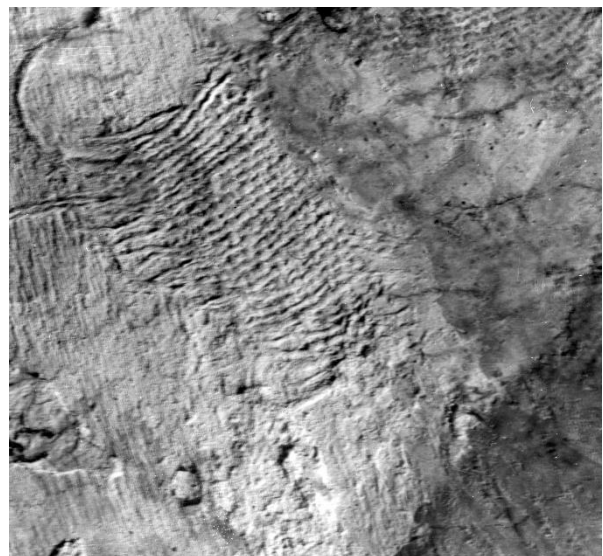
The back of the panel was shaved down with an electric plane in diagonal sections. The final stage was done by gouges. The thinning of the ground could then begin by scalpel under the microscope. Brita Östmar (S) took care of this operation.



A transfer reveals the making of a painting in the reverse, offering interesting insights. Already at this stage something was expected.

Between panel and ground strips of canvas had been applied, mainly over weak or critical points such as joins in the panel and knots in the wood. The transition from full covering of canvas in the middle ages to partial covering and no canvas (or parchment, loose fibres etc) at all is a long story in the history of European art technology.²⁵

The detail to the right, made after the panel had been removed, shows the impression left in the ground from a canvas strip.



²⁵ The use of this structural 'third element' in northern and southern European painting in the period c.1100-1550 has been outlined in Erling S. Skaug, «Not just panel and ground», in Joyce H. Townsend *et al.* (eds.), *Preparation for Painting. The Artist's Choice and its Consequences*, London (Archetype) 2008, pp. 22-29.

It is well known from written sources and numerous technical examinations that artists in the Middle Ages and Renaissance drew a first sketch on the ground, followed by partial incisions to mark areas to be gilded and to retain the design throughout the painting (cf. Neri di Bicci, pp. 33-34). But it is always a revelation to see how the artist began his work in a given case, compared to the final result. Here we have two works from the same city, about a quarter of a century apart.

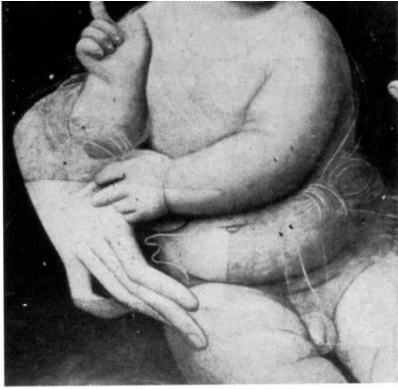
The incisions in both works have much the same purpose: the folds of the Madonna's blue robe, and architectural elements that could be made by ruler and compass. Incisions towards gilding are naturally missing in the present case.²⁶ Only the Child's halo is incised, obviously as a guiding line for painting since it is circular and could be made by a compass, whereas the Madonna's halo is elliptical. To study and point out deviations between the incised design and finished painting is a popular game, which has not been pursued here.²⁷



The totality of Neri di Bicci's underdrawing cannot be shown, since only a few IR-details were made and the ground was not completely removed during the transfer. The latter was the case for the *Madonna del giglio*, however. Whereas Neri di Bicci made his underdrawing by a pen or metal point (p. 33 and note 16), our anonymous master's elegant brush drawing gradually came to light again.

²⁶ Unfortunately, only a badly lit photograph of the original tracing was found in July 2016.

²⁷ In Skaug 1978, Plate III a-b (but deleted in the reworked version above) such deviations in St Catherine's wheel have been shown. Possibly they reveal some struggle with perspectivic foreshortening.



Confrontations between the front and reverse indicate that the work was well planned, no improvisations or *pentimenti* observed. The underpaintings would have been interesting to study in comparison with the cross-sections above if colour photographs had been available for the present publication.

To the right below the painting after restoration.



5.5. Grinling Gibbons, *Allegorical Trophy*, carved wooden relief, c.1680. Museo del Bargello, Florence.

Grinling Gibbons (1648-1721), born in Rotterdam, was already in his lifetime acknowledged as England's foremost wood carver. He was buried in St. Paul's, Covent Garden, London. The allegorical *Trofeo* (c.100x130 cm?)²⁸ is considered to be one of his masterpieces. In 1682 King Charles II of England presented it to the Grand Duke Cosimo III of Tuscany.²⁹

The relief is composed of several superimposed layers of wood (apparently limewood), glued together. When entrusted to the Nordic Centre in 1967 the work, having been crushed and totally submerged (black and white photograph below), represented a complex puzzle of large and small fragments – twisted and deformed so that they did not readily fit together.



The restoration lasted for two full years and engaged two Swedish experts. On the next page Rune Håkansson (with head lens) discussing the final stages in the work with Steen Bjarnhof.

²⁸ Unfortunately the measurements given in a note concerning this work are only approximate. No written report on its restoration has so far been found.

²⁹ When found in pieces after the flood professor Otello Caprara, Bologna (see n. 1, p. 18 above) judged it to be a 19th-c work of no interest, and apparently convinced Soprintendente Ugo Procacci of his view, see Piacenti 2009, p. 137. Some of Caprara's interventions on the St. Sebastian tabernacle were highly controversial, among other things destroying original drawings on the back of the ensemble. Undoubtedly an expert on woodwork and furniture, our impression of his overall competence (albeit not of his energy and status) inevitably differs from that given by Fred Licht in Spande (ed.) 2009, p. 155. Neither did Caprara restore Donatello's *St Mary Magdalen*, as Licht would have it. That was done by the eminent Florentine restorer Pellegrino Banella at the Fortezza da Basso after a preliminary examination of its original polychromy by the Nordic Centre at Palazzo Davanzati (p.14 above).



The supporting back panel and the larger components were step by step returned to their flat shape by carefully inserting narrow wedge-formed strips of wood in the fibre direction of the original. The long-term stabilisation of each element in their corrected shape often required further adjustments before it was considered safe to continue.

Many of the small fragile fragments had become more or less deformed upon drying. Aside from the problem of localising each piece in the puzzle the reassembling of the whole work, bit by bit, often required corrections of each element by plastic re-deformation was during the very process of gluing them together.



5.6. Lombard artist, *Sts Peter and Paul*, polychrome sculptures, 14th century
Museo Horne, Florence, Inv.No. 113-114. (Alluvione Nos.710-711)

Examination and treatment took place mainly in Palazzo Davanzati, 1967-69.³⁰ The sculptures, height c.57 cm, showed wear and small losses of older date. St Paul's right hand and the fingers of St Peter's hand are lost.

Obviously the two sculptures had been floating face down in the water: a sharp line of losses runs along both sides. In the gilding peculiar deformations have probably been caused by swelling of the ground in water and contraction upon drying. The wrinkled surface, with the cracks lying beneath the surface (enlarged detail below, note that the light comes from the left) can be compared to that of the next entry, especially p. 53.

Loose paint was fixed with a beeswax-dammar mixture (2:1). Remains of mud were removed with a scalpel, in the gilded parts with 25 % alcohol in water. Losses were filled and re-touched, and the entire surface finally protected with a solution of beeswax in turpentine with some dammar resin added.

Analysis:

The ground is of calcium sulphate (gypsum) in a tempera medium, occasionally with an isolation layer of tempera on top. Also the paint medium seems to be a tempera. In parts painted with vermilion and red lake the medium seems to be on the basis of a drying oil. The use of (egg?) tempera instead of glue in the ground may explain the relatively good condition after the submersion (cf. entry below).

Pigments found are *Blue*: azurite. *Green*: Cu-pigment, used for glazes. *Yellow*: ochre. *Reds*: vermilion, ochre and red organic lake. *White*: lead white. *Black*: charcoal. *Metal*: gold leaf.



³⁰ Analyses by Unn Plahter (1967). Notes on condition and treatment by the author (1968-69).

5.7. Master of San Niccolò, *Madonna and Child with Sts. Andrew Evg. and Martin of Tours*, 1350s. Church of S. Niccolò Oltrarno, Florence. (All. No. 252)

The 'Master of San Niccolò' is a provisional designation for an Orcagnesque artist active from c.1350 on, first identified by Richard Offner.³¹

The triptych (150 x 180 cm) is the artist's key work. Its original provenance is unknown, it did not originally belong to the church. The main Saints have more recently been identified at variance with the label of the inventory after the flood ('*St Nicholas and a Bishop Saint*').³²

The flood caused large parts of the surface to be covered by mud (below right), creating a tricky problem for its removal from the large areas of water-sensitive leaf gilding. Regrettably, only photographs and a few sketches have been found from the long examination and treatment of this work.

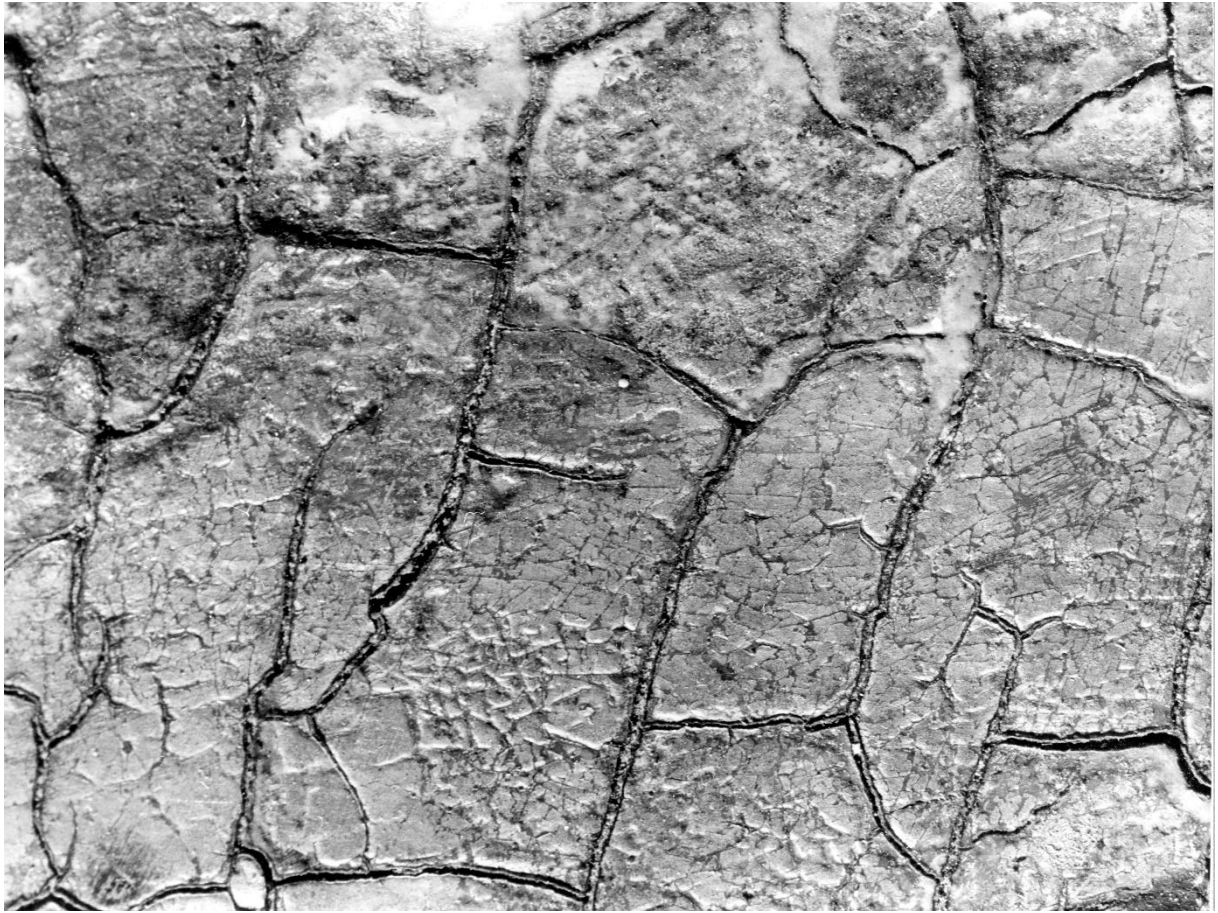
A note, apparently from what seems to be part of a planned manuscript for an article, tells that 55 cross-sections were prepared, and the colouring materials analysed. *Blues*: ultramarine, azurite. *Greens*: green earth, Cu-resinate. *Yellows*: orpiment, yellow ochre, lead-tin yellow. *Reds*: vermilion, bole; plus lead white, charcoal black, and gold. The ground is calcium sulphate (gypsum) in animal glue. Both the choice of materials and the technique seem to be perfectly in accordance with the conventions of the *Trecento*, a long and relatively stable period with few major



³¹ The group of works attributed to this artist was subsequently expanded by Federico Zeri and Miklós Boskovits, see summary in Erling S. Skaug, *Punch Marks from Giotto to Fra Angelico*, Oslo 1994, pp. 149-151.

³² I am grateful for measurements and information on iconography kindly communicated (August 2016) by Grazia Badino, art historian and sacristan of San Niccolò Oltrarno, who also supplied additional literature. The triptych was presumably moved to the church at some point of time after 1862, see Giovanna Damiani in G. Damiani and A. Laghi (eds.), *San Niccolò Oltrarno. La chiesa, una famiglia di antiquari*, Florence 1982, p. 47.

deviations from the familiar treatise *Il libro dell'arte* by Cennino Cennini, written around 1400 or soon after. Compared with the sculptures of *Sts Peter and Paul*, entry above (p. 51), with a ground in (egg?) tempera, not the water-sensitive animal glue, the difference in craquelure may



be of a certain interest. The direction of light is here from above.

Regular blisters in the paint layers (detail to the left), caused by movements of the panel before and after the submersion, could in this case – contrary to the condition of the work by Neri di Bicci and the *Madonna del giglio* (entries 5.3 and 5.4 above) – be dealt with *in situ*. The complex construction of altarpieces of this type would in any case generate hesitations with regard to a transfer.



The cleaning and consolidation of the pictorial layers occupied most of the time that Lone Bøgh (DK, left and below) and Ewald Håkansson (S) spent in Florence.

Of the little that has been found from the technical examination can be shown a few tracings, apparently by Bjørn H. Kaland (N), which show the relationship between the incised design and the painted figures:

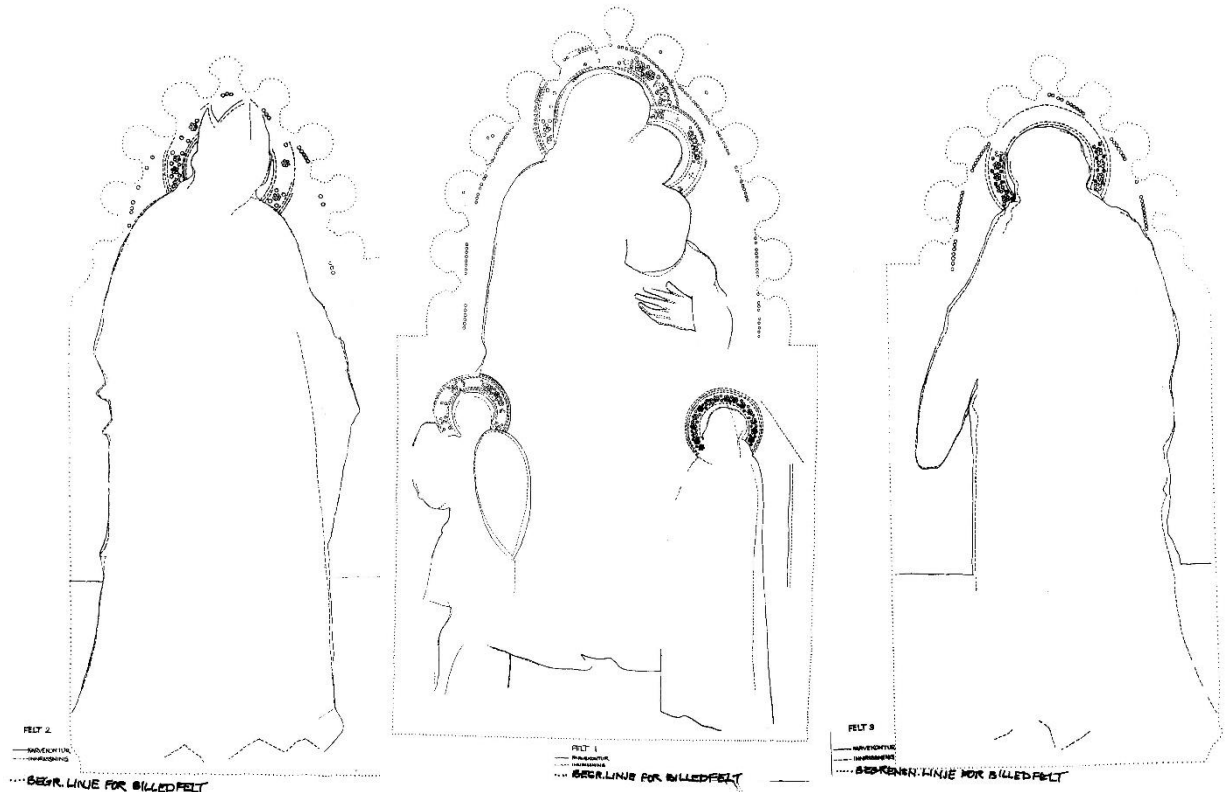
tionship between the incised design and the painted figures:

Dotted line (. . .) = limitation of pictorial field.

Stippled line (- - -) = incision.

Full drawn line = outline of painted figure.

The incisions in this case appear to represent the borders for parts to be gilded, in relation to the overlappings of paint over gold.



5.8. Giovanni del Biondo, *Sts John the Baptist, Anthony Abbot and Nicholas with the Angel of Annunciation above*, 1386. Church of Pieve di San Pietro Romena, Arezzo. (Alluvione No. 309)

Giovanni del Biondo (documented 1356, d. 1398/99) was arguably the most productive Florentine painter in the second half of the 14th century. The panel measures 144 x 48 cm and is the left lateral of an altarpiece, dated by inscription 1386.³³

The work was entrusted to the Nordic Centre in November 1967, and the treatment was finished in May 1970.³⁴ The photographs below show the painting before and after the removal of the preliminary front protection. Pigments and painting materials were analysed. *Blue*: lapis/ultramarine. *Green*: none. *Yellows*: lead-tin yellow(?), yellow ochre. *Reds*: vermilion, red lake, red ochre. *White*: lead white. *Black*: charred matter. The medium seems everywhere to be a tempera. The ground is calcium sulphate (gypsum), apparently in glue.

No report on previous treatments seems to exist. Certain original elements were missing: the two columns, their capitals, and its base on the right. Several parts have been destroyed by previous cleanings. Old retouches all over the painting cover original paint. Losses of various dates, but certainly none of them were due to the flood. However, deformations in the surface texture must have been caused by a softening of the ground from the immersion in water. Gilding, paint and ground in the cusp, with the exception of the Angel in the trefoil, had obviously been removed long time ago, leaving the bare wooden surface. The back of the panel had recently been cradled: the transverse elements could be moved easily



³³ Formerly Pratoveccio, Pieve di Santa Maria. See Richard Offner and Klara Steinweg, *Corpus of Florentine Painting*, Section IV, Volume V (1969), p. 10. The recorded inscription «Anni Domini MCCCLXXXVI» is now lost. See Skaug 1994 (note 31 above), p. 202.

³⁴ This entry is based on reports in the OPD archives by Unn Plahter (December 1967-January 1968); Erling Skaug (1968-1969); Helge Christensson (May-July 1969); and Mette Bjarnhof (September 1969, March-April 1970).

and there was no warp or serious deformation in the support. The wood was heavily worm-eaten and porous.

The preliminary front protection of tissue paper and Paraloid B-72 was removed. In spite of the bad condition of the panel it was decided not to transfer the painting, but instead to fill the cavities in the wood – localised acoustically by tapping the surface – with gypsum in rabbit skin glue (with Thymol added), injected by a syringe. As was the case also in other works fixation of paint took place simultaneously with the removal of the facing. The first injections of gesso actually had to be done before the facing was removed. The paint layers were fixed and blisters put down with rabbit skin glue, which to some extent was absorbed in the support and required repeated treatments.

The cleaning comprised old discoloured varnish, which was unequally distributed and visually disturbing. It was removed – after tests in turn with ethyl alcohol, a commercial paint stripper ('Nitromorf', containing benzene), and pyridine diluted in white spirit – with a paste of 30 parts pyridine, 30 parts mono butyl amine, 10 parts white spirit, 10 drops of concentrated ammonia, plus bees-wax to form an adequate consistency. This paste worked well also for the cleaning of the vulnerable gilded parts (with especially good results for the *sgraffito* inscription on the lower frame moulding) and for the old retouches, in the latter case combined with mechanical removal after softening.

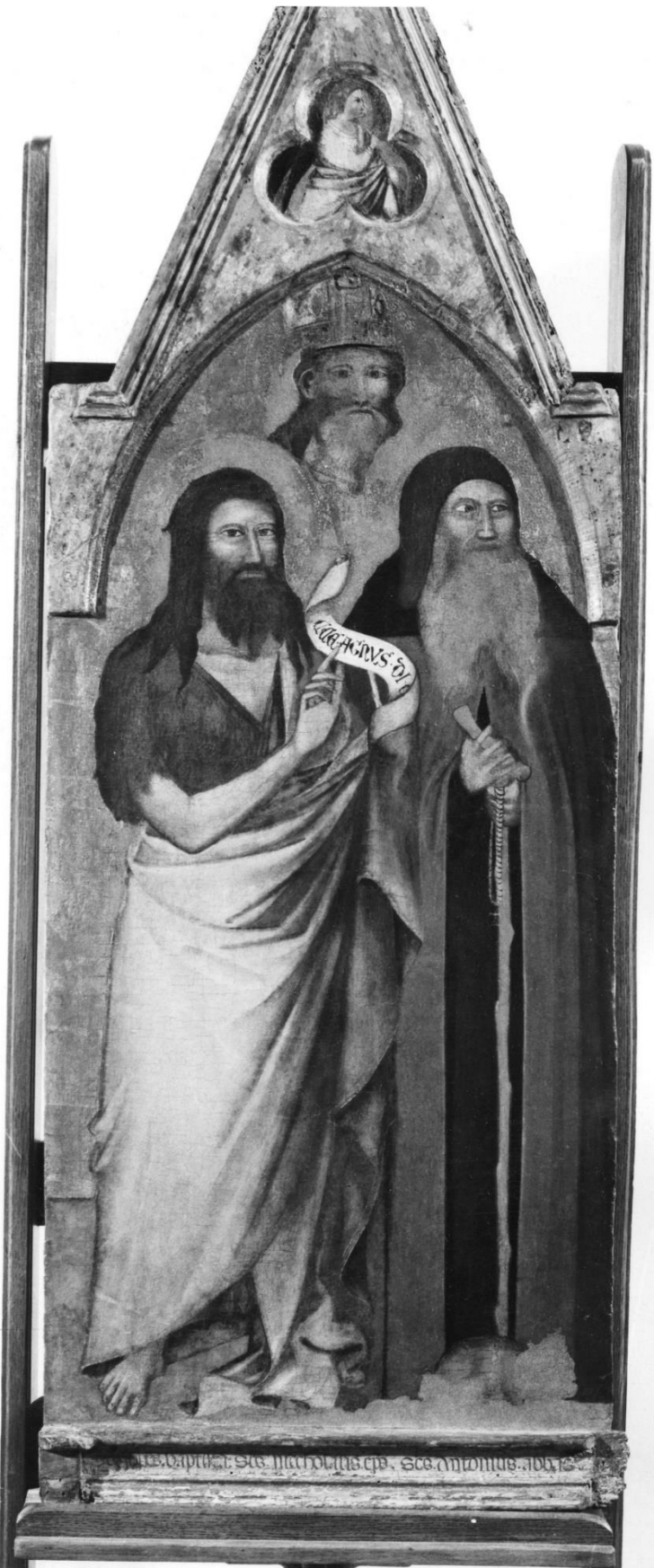


Detail of the St John the Baptist during cleaning. Below a detail of the sgraffito inscription in white and gold after cleaning.



In the haloes two separate previous restorations could be identified, aided by microscopic cross-section. The oldest one consisted of a thick, greyish-yellow layer of coarse fibrous particles followed by a red layer, apparently an attempt to imitate the effect of gold and bole – but in the inverse order. The second restoration seemed to have been covered by shellac(?). The resulting thick, disturbing strata were largely scraped away by a scalpel under microscope, but quite generally too little was preserved of the deformed gesso/bole/gold structure, with its three-

dimensional punched patterns, to make a consistent exposure of the actual state of the original substance worth the effort.



On the advice of one of our Florentine colleagues all the new fillings were kept a few millimetres below the original surface for the easy distinction between old and new. The first tentative inpaintings of this ruinous painting apparently proved unsatisfactory and were later on removed with acetone. The fillings were redone, level with the surface, and the inpainting done with fresco pigments in a mastic/turpentine medium. The losses in the gilding and the 'neutral' solution of the pig in the lower right corner (St Anthony's attribute besides the Tau-shaped stick), were finally adjusted with a commercial tempera ('Couleurs de Muzii').

The entire pictorial surface was then impregnated with a beeswax/damar-mixture (7:3) under infra-red heat. The mixture was quickly absorbed in the porous substructure. In spite of a relatively short exposure to the heat (about 15 minutes) some of the previously filled cracks in the panel re-opened. Excess wax/resin was removed with white spirit. Subsequent fixing of the paint layer was done with an electrically heated spatula.

Also the back of the panel was impregnated with a wax/resin mixture in order to create an approximately equal moisture barrier on both sides.

After restoration

5.9. School of Ghirlandaio, *Annunciation with Sts John the Baptist and Lawrence*, c.1500. Church of San Lorenzo le Rose, Florence. (Alluvione No.190)

The conventional label «School of» does not necessarily mean that the artist, in this case so far unknown, had been trained by the Florentine master Domenico Ghirlandaio (1449-94).



The work was entrusted to the Nordic Centre in the early autumn of 1967. Above are Tuulikki Kilpinen (SF) and Sinikka Gustafsson (SF) at work during removal of the preliminary front protection. In several cases the Paraloid B-72, tended to become more heavily soluble with time. Ideally, as shown above, about ten minutes swelling with xylene in a cotton swab would make the tissue paper loosen, the facing to be removed, and the rest of the resin wiped away from the surface. This case proved less problematic than many others, in part also because of the relatively good condition of the painting.



Helena Pykkänen (SF) and Mirja-Liisa Weismaa-Pietarila (SF) were among those who took part in the cleaning of old discoloured varnish.



Above and below the painting during cleaning. Inpainting of the numerous small losses followed.



5.10. Alessandro Fei (del Barbieri), *Annunciation*, 1576. Church of San Niccolò Oltrarno, Florence. (Alluvione No. 745)

Alessandro Fei, called «del Barbieri» (1543-92), was a pupil of Domenico Ghirlandaio. He is known to have assisted Giorgio Vasari during his commission in Palazzo Vecchio.

The *Annunciation* was entrusted to the Nordic Centre in July 1968, and the work finished by the summer of 1970. The treatment consisted in the removal of the preliminary front protection of tissue paper and Paraloid B-72, fixation of paint, putting down of blisters, and probably of cleaning and re-touching. Records of treatment were unavailable in the moment of writing, but the brief sequence of photographs shown here is perhaps eloquent enough.



4th March, 1967 (above).

The entire painting covered by the preliminary front protection. After a slow drying out of the panel in the temporary storeroom in the Boboli garden it was considered ready for treatment and transferred to Fortezza da Basso.

19th July, 1967 (left).

Detail during the removal of the preliminary front protection. As usual, this process went parallel with a first fixation of the paint.

25th August, 1968 (below, left and right).

One year later, small blisters had begun to form all over the surface. Glue was applied to the critical points, followed by small pieces of tissue paper as a protection between the painted surface and the heated spatula by which the blisters were carefully put down.



Followed by cleaning and retouching (not shown here) the treatment would normally be considered finished. But ...



May 1976.

By this date new blisters had formed, apparently a telling symptom of the long-term effect of the dramatic immersion ten years before.

More generally, this goes to show that no restoration is final. Our profession has often been compared to that of medicine. With some cynicism it may be pointed out that, after an average of plus/minus 80 years the problems of medical doctors' patients are usually solved, whereas our "patients" are ideally expected to survive forever, as testimonies – in some form – to times and cultures different from those to come after us.



Extra bonus: Cimabue

Unrelated to our work, but taking place in the adjacent hall, we could follow the treatment of Cimabue's large painted crucifix (4.50 x 3.90 cm). It might be of interest to share a sequence of the process with the reader, since it makes for a counterpoint to the transfers described above and gives a glimpse of the Florentines' own work. This masterpiece by Giotto's forerunner, datable c.1272-80,



was hanging in the museum of Santa Croce, at an angle turning downwards. On 4th November the flood waters rose to the top of the cross and soaked its water-sensitive ground for several hours. When the waters receded large areas of ground

had dissolved and lost the grip in its substratum and fell to the floor, with their respective pictorial parts, by the merciless effect of gravity.



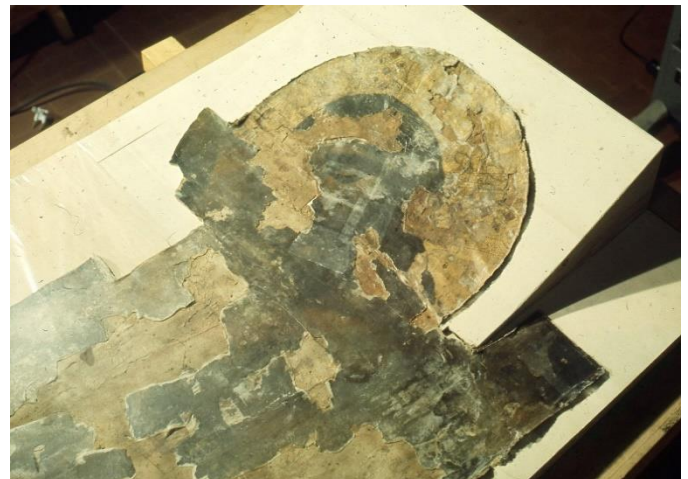
Disinfection done by Massimo Seroni with Edo Masini to the left. LoVullo and Masini's plan for the treatment was to remove the paint layer – without destroying the historically important construction of the wooden cross – by a modified *strappo* instead of the usual *trasporto*. This possibility was offered by the fact that the wooden surface had originally been completely covered by canvas before the ground was applied.³⁵ Painting, ground and canvas could, as a three-layer structure, be removed by a separation between canvas and wood.



³⁵ Full covering of canvas was the rule in Florentine painting in the Duecento and Trecento. During the early Quattrocento the use of canvas was reduced to strips over joins and critical points. See p. 46, note 25 above.

This delicate task was entrusted to Vittorio Granchi. A semi-stiff, double facing of tissue paper with Paraloid, like the one used for transfer (p. 37 above), would protect the pictorial layer from possible deformations whereas the lacunae, with the bare canvas, were cut free. Gradually, with the minimum of moisture needed to adequately soften the glue between canvas and wood, the «triple sandwich» was removed with a spatula, blotting paper put in-between as the work proceeded. A cover to maintain the relative humidity was partially removed at intervals of work during the long process of this operation.

The entire painting was lifted off its wooden support in this way, section by section, conserved, cleaned, joined together, lined, and finally re-attached to the cross – stapled as a canvas painting onto a rigid support.³⁶



The restoration of the image is a separate story.³⁷ Interesting details came to light after the transfer. An irregularity (knot?) in the support had been replaced by an inserted piece of wood and smoothed with a putty of glue and gesso. Joins between elements of contrary grain direction had been filled with fibres to allow movements without disturbing the level surface of the support. Done before the canvas was ap-



plied, such details testify to the technical insight and perfectionism invested from the very beginning for a monumental work of this type in a major 13th-c Florentine *bottega*.

³⁶ This is just a broad description of the principles followed, details in the actual performance left out.

³⁷ Umberto Baldini, *Teoria del restauro e unità di metodologia*, Volume 1, Florence (Nardini) 1978, and numerous subsequent studies.

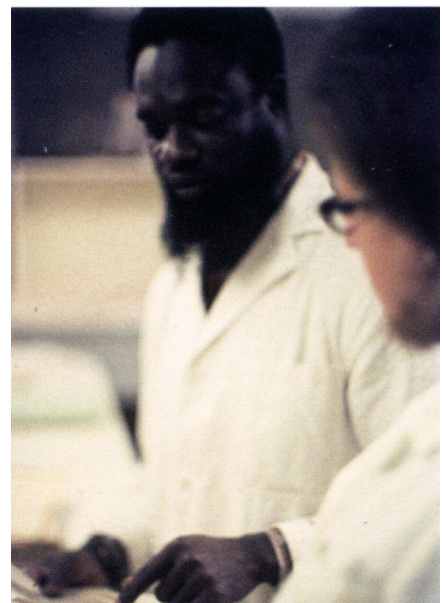
(II) Books and archival material, etc.

Bookbinders and paper conservators worked mainly in the Biblioteca Nazionale Centrale, integrated in a large international team. They faced a situation never before met with in history. A weak impression is given by the glimpse below of the main hall in the library, at a point of time when the attempts to tidy up had just begun.



The enormous number of objects requiring treatment called for the development of mass conservation procedures of paper on the one hand, and for skilled traditional rebinding of books on the other. Anthony Cains, British master bookbinder, and Joe Davidson Nkrumah, brilliant conservation chemist from Ghana with an international background, formed a successful team and helped to organise the works during the four-year period 1967-71.

The nature of the work, and the fact that much of it became organised in teams, left few specific reports of the individual items treated.³⁸ Records there are, and undoubtedly on the valuable books and on principles of approach to historic bindings, etc., but these records were not specifically included in the Nordic material – and unavailable to the author in the moment of writing anyway.



³⁸ But see comprehensive descriptions of the works in Spande (ed) 2009, pp. 16-96. Charlotta Bylund Melin, chair of NKF-S, kindly sent me a link from the works in the Biblioteca Nazionale, made in 1968 with Peter Waters, a key person in the early phase, as consultant. https://www.youtube.com/watch?v=lp6698z_QmY.)

In the photograph below members of the international team working in the Biblioteca Nazionale – to judge from the raised plastic cups apparently during an event similar to the *spumante* parties at Fortezza da Basso (see p. 68 below). Bookbinders Arne Møller Pedersen (DK) and Henning Madsen (DK), third and fourth from the left, respectively, were highly praised by Tony Cains for their outstanding level of craftsmanship.



In the Archivio di Stato manuscripts on parchment had reacted violently on contact with water and contracted into hard balls. Brynjulf Fosse (N) tried to find methods that would enable parchment pages to relax and open into flat sheets again, but in the moment of writing it has not been possible to give more details about his work. Fosse later on developed new methods for saving and reading charred papyri from Herculaneum.

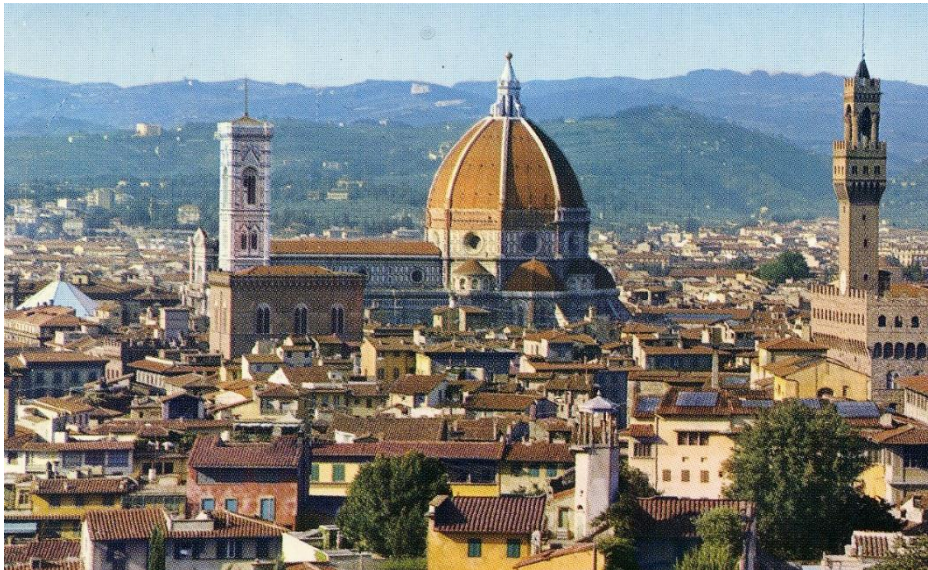
“Etc.”: textiles, pottery and music

Work was also done on other groups of objects, especially by our versatile colleagues from Finland: The list of participants contains three textile conservators, two of whom – Disa Bergman (SF) and Hilka-Liisa Nieminen (SF) – took part in the library team, and perhaps also the third, Anja Rantala (SF) did. Their compatriots Thorvald Lindquist (SF) and Gösta Östman (SF) restored pottery in the Museo Arcaeologico. Carlo Bergman (SF) worked on historical musical instruments from the Museo Bardini and the Conservatorio di Musica Luigi Cherubini – and finally gave a concert for us on a 17th-century serpent to test its recovery.

6. POSTLUDE

With good-humoured sarcasm, *la seconda alluvione* was the Florentine nickname for the conservators flooding in from many parts of the world, wanting to help. During the first weeks and months after 4th November 1966 urgent rescue operations and first-aid measures had been carried out by *gli angeli del fango*, the mud angels – i.e. students, soldiers and other lay volunteers. Professional intervention was the next stage.

That stage had been anticipated by the Florentine authorities. As told in Chapter 3, a large storeroom with high relative humidity had soon been established in the Boboli Gardens where panel paintings, covered with preliminary front protection, were allowed slowly to dry out. The pictorial layers would be at risk when the wooden supports, swollen with water, began to shrink. This was much a race against time. In this situation to organise the actual conservation work, with a great number of new and unknown colleagues in the team, was not necessarily a straightforward matter. Hence the nickname. And the Florentines managed superbly.



Leif E. Plahter, who directed the first group of Nordic conservators from July 1967 on, anticipated also a potential culture collision. In the global sense the development of the profession entailed a degree of internal tensions at the time. The ideal profile of the so-called «conservator/restorer»³⁹

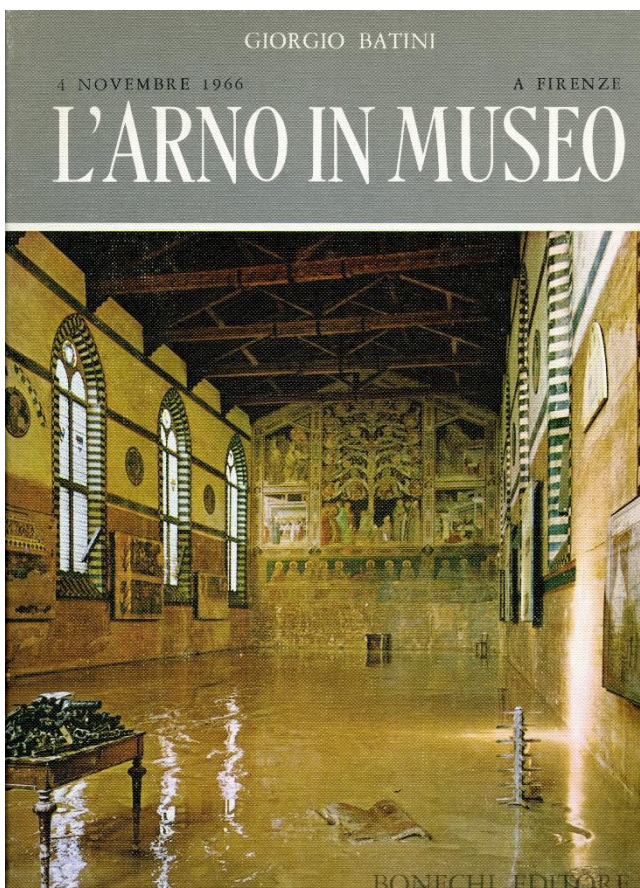
underwent explosive changes, whereas local traditions lingered on within the confines of language and to some extent in isolation. To simplify the situation a bit, North European and English-American post-war conservation may be said to adopt an approach based upon, or at least influenced by, scientific analysis. South European and Latin countries had through generations cultivated and refined an empirical and intuitive approach, at its best on a highly advanced and articulated level, which – it must be said – academically based study programmes were soon to deplore as missing. Moreover, the «cleaning controversy» over the practise in London in the 1940s had the effect, albeit unintentional, of creating a mindset against the practise particularly in Paris and Rome. The Weaver Report, however, had found that no harm had been done to the cleaned paintings in London, which, for one thing, would support the legitimacy of revealing an aged artwork's *actual state* (amongst connoisseurs in some quarters

³⁹ The definition of the profession, finally formulated by ICOM-CC in 1984, originally used the term «conservator/restorer» due to the conventional title variations from one country to another (*restauratore, restaurateur* vs. *conservator, konservator*). The slash, not hyphen, indicated that the two titles are parallel and interchangeable, not the trivial fact that two different operations are included. In English, the change from «restorer» to «conservator» may also reflect a change of emphasis – not merely harking back to a 19th-century polarization (Viollet-le-Duc vs. Ruskin in the Restoration/Anti Restoration debate), but referring to the increasing role of climatic control and preventive measures – so-called «passive conservation» – to reduce interventions in the historical object.

giving rise to the misleading expression ‘flayed paintings’ and their division of the world into ‘sensitive’ and ‘insensitive’ restorers). But the case became emblematic for the difference between the North and the South, respectively, with a general long-term effect in attitudes and spinal cord reflexes. And rumours circulated of a more recent conflict: it was said that, soon after the flood, an *equipe* from the Istituto Centrale del Restauro in Rome had arrived and offered to take care of the whole problem. Little else could hurt the local pride and expertise more. Allegedly the Romans were thrown out.

Whatever truth there may be in this latter story it acted as a backdrop for some of the foreign groups. Under the circumstances Plahter’s advice was undramatic and just a matter of polite behaviour. «We are enrolling as private soldiers in the Florentine army. We must ask them to show us what to do». Consequently, of course, we learnt a lot. None of us had ever done transfer of panel paintings, for example, a method brought to perfection *alla fiorentina*, and now applied with the imagination and skill required under the exceptional circumstances of total submersion in water. Inevitably, the curiosity of our Florentine colleagues soon arose, asking what we would have done in this or that case. A breakthrough in mutual exchange came when our colleague Bent Hacke (DK) introduced his improved low-pressure (suction) table for the treatment of canvas paintings. Florentine expert reliner Sergio Taiti, a virtuoso with *colletta* and ironing, soon realised its potentials. And since transferred panel paintings were transformed into «canvas paintings» in the first instance, further treatment could be done on the low-pressure table before being mounted onto a rigid support.

Any field under development necessarily goes through periodical trends. The vacuum table/low-pressure table was a preferred tool in Northern canvas treatment methodology from the late 1950s to the ‘70s. The Greenwich conference in 1974, however, changed attitudes, a more precise understanding of minimal intervention was gained, and the vacuum table approach was eventually abandoned. But the Hacke-Taiti example illustrates how *la seconda alluvione* brought new methods and ideas to a receptive ambience.



Al Dr. Erling Skaug
per grato ricordo del suo
soggiorno nella fortezza
di Basso quale capo del
Gruppo nordico dei restau-
ratori; un ricordo che vuole
essere un segno di stima e
di amicizia e al tempo stesso
so un ringraziamento per
quanto ha operato nel restauro
delle opere d'arte fiorentine
colpite dall'alluvione. Con
il piacere di averlo ancora
tra noi anche come caro e
affettuoso e leale nostro
amico.

Umberto Baldini
Stallman
Tano Lo Vello
Vittorio Grauchi

30 giugno 1969

Frustrations over the total situation were unavoidable under the circumstances, but the success of the collaboration was expressed by our colleagues' dedication in a book presented to the four directors at the end of our period (preceding page). With the position that technology in general holds in Italy, the OPD soon caught up. An analytical laboratory was established, as well as contacts with external scientific and high-technology expertise. Journals, collaboration projects and exhibition catalogues flourished, excellently illustrated and sometimes in bilingual editions. In a field where cultural initiatives invariably have to struggle for adequate means, the OPD in the following years succeeded in convincing financial institutions and sponsors of their responsibility towards the world heritage of Florence – the very point of departure for the international reaction to the catastrophe. With increasing economic difficulties in the world today one can only hope that an equivalent high level of response could be achieved, one that survives also into the future.

Unfortunately, the situation is not quite so rosey for book conservation. On a revisit to Florence ten years ago, Joe Nkrumah deplored the discontinuity in the project he and Tony Cains successfully had launched in the Biblioteca Nazionale. The technical equipment was stored away, neither training nor actual work was going on, and of course the immense task is still by no means finished.⁴⁰ One factor in the situation may be the difference in status between art on the one hand and the less spectacular nature of historical sources on the other. Both the Danish and the Norwegian state archives realised the latter possible aspect of the situation and offered help within their own countries besides the personnel put at disposal *in situ*. Loads of damaged books were transported by diplomatic flights from Florence to Copenhagen and Oslo and back, and to Oslo also for some years after the Nordic project officially ended in 1970.

The social side of the project should not be forgotten. Even among the Nordic participants few had actually worked together before, and many of us barely knew each other by name. Week-end picnics in the countryside or visits to the seaside, often combined with the study of a historical monument, were arranged spontaneously. A fixed ceremony was the *spumante* party with cakes and bubbly water when one or more of the participants returned home after their



period of work. A unique event took place in the Loggia dei Lanzi on 17th May 1970, Norway's constitution day (marking the end in 1814 of over 400 years of union with Denmark), when Steen Bjarnhof gave a speech and was decorated with a ribbon in Norwegian colours «in compensation for the loss of a former colony».

His conservator wife Mette waited upon him with champagne in a cardboard cup.

⁴⁰ Joe Nkrumah, «Where is the progress?», in Spande (ed.) 2009, pp. 85-88.



The Fortezza da Basso team (with reserves). “Captain” Umberto Baldini proudly standing to the left.



The Palazzo Davanzati team, with its coat of arms on the shirt. Leif Plahter standing third from the right.

So much for the ‘internal’ Nordic events. In the spring of 1968 an international football match between Palazzo Davanzati and Fortezza da Basso took place, with a fervour that left Edo Masini halting ever after. Nobody seems to remember who won. A particular memory not only for the

Nordic was the Todorow family’s generous hospitality towards foreigners. The connection was Nadia Todorow, secretary at the Fortezza, whose mother Rina regularly invited members of *la seconda alluvione* to garden parties in the family villa at Settignano, often joined by Nadia’s brother Giorgio and his wife Maria Fossi – both deeply involved in museum work.

As mentioned above we shared the largest hall, plus an occasional coffee, with the groups of Polish and Czech conservators (in the background in the photo to the right). Very able and amiable, our conversation got along in a strange but efficient mix of German and Italian. Small portable radios were often on with discreet classical music. One morning in the autumn of 1968 the music halted, and the news reporter told that Soviet tanks had invaded Prague and put an end to the ‘Velvet Re-volution’. In Warsaw pact terms, the Polish conservators were thus suddenly at war with their Czech colleagues across the room. They all took the day off for a drink (or several) together.



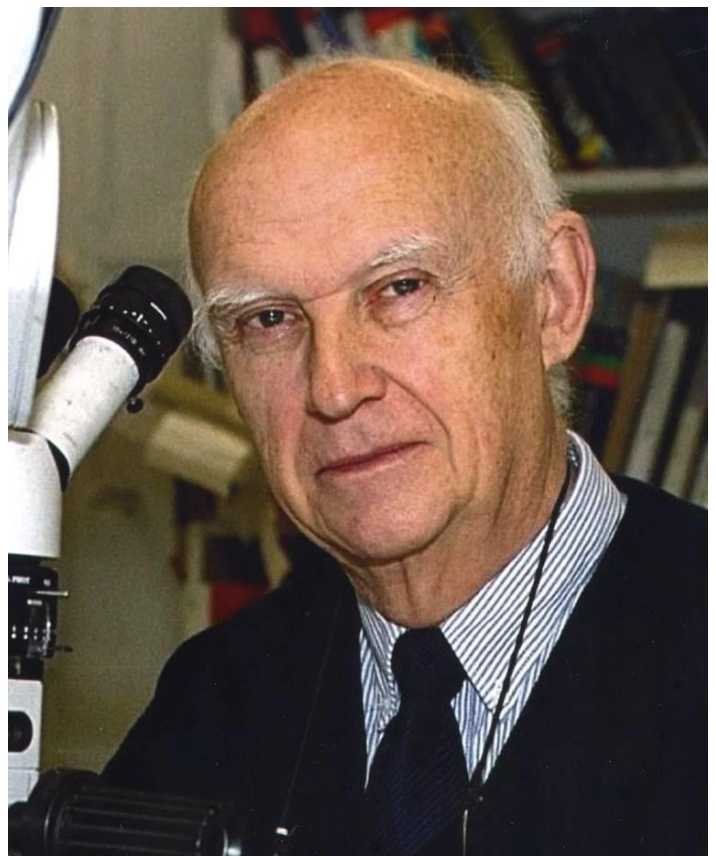
After fifty years our distinguished Florentine colleagues Gaetano LoVullo, Edo Masini, Vittorio Granchi, Sergio Taiti and others have since long passed away, and in this have been

followed by a greater part of the Nordic participants. Personal networks tend to fade away with time, but the post-flood era will remain as a distinctive period in the history of conservation and restoration – and as a fortunate point of no return: it must be fair to consider the *Alluvione* of 1966 as an event with the blessings of a catastrophe in its wake.

Last but not least, the two major Nordic experts in art conservation in the 20th century deserve special mention for their leadership in the demanding start and end phases of the project. Leif Einar Plahter (1929-), the architect behind the first Nordic official study programme in the field (cf. note 1 above), successfully established the Nordic Centre with profound insight and authority. Steen Bjarnhof (1925-97), the dynamic and charismatic founder of the Danish School of Conservation, managed to wind up our affairs equally successfully during the hectic last year. In their lifetime, each has set an incomparable professional standard for art conservation in the Nordic countries.



Steen Bjarnhof at the age of 67, 1992.



Leif E. Plahter at the age of 70, 1999.

Editorial notes

A comprehensive book on the Nordic Centre was planned to be published after the end of the project in 1970. Full funding from the official Nordic Action Committee was granted, and the present author appointed editor. Since only three of the planned manuscripts resulted, the book project was abandoned and the articles were published elsewhere (here reprinted or reworked in Chapter 5 as entries 5.1, 5.2, and 5.3).

As the 50th anniversary for the flood drew near, participants still alive encouraged me to try and recollect the basic facts of the Nordic project. A plan for a publication was launched in the late summer of 2015, and a Nordic editorial committee was proposed (cf. last calls for photographs and notes by Waismaa-Pietarila 2016 and Skaug 2016). This turned out to give scarce results. Obviously, supplementary information was simply hard to retrieve. With the editor turning author, the present account may thus lack a balance that it might otherwise have had, perhaps with an over-emphasis on the second of the three years of the Nordic Centre's activity. Any inevitable personal points of view in the story told above will not, it is hoped, give a misleading representation of what was achieved.

It was agreed in advance with Professor Marco Ciatti, Soprintendente of the *Opificio delle Pietre Dure e Laboratori di Restauro*, that a separate Nordic publication would not interfere with the official Florentine plans for 2016. Thanks to his kind support and the indispensable help of Dott.ssa Anna Mieli, Director of the *Archivio dei restauri e fotografico*, the *Archivio storico*, and the *Biblioteca «Ugo Procacci»* it was possible, during a visit to Florence in July 2016, to consult the material pertinent to our activity 1967-70. OPD also kindly put their xerox and scanning equipment to my disposal.

Sincere thanks to Sidsel Magelssen Vivarelli Colonna for, like often before, supporting also my stay in Florence in July 2016. Thanks extend to my colleague Jeremy D. Hutchings for kindly reading through the text and improving my English (except for Chapter 5 and a few last-minute additions). Mirja-Liisa Waismaa-Pietarila was the main pusher of the project, and contributed with Bente Thurmann-Nielsen and especially Nanina Løken in various ways during the process. Being the formal publisher, the Norwegian section of IIC Nordic Group (NKF-N) shared the unexpected burdens of the subscription procedures and the caprices of today's international banking. Last but not least my wife had to endure my mental absence much of the time since last year. Without her patience the manuscript for this publication would have been more like a brief journal article.

In consideration of the resources spent by Nordic governments and institutions on this unique *ad hoc* project at the time, to be estimated to at least € 7 millions if launched today, the difficulties of funding even the modest basic expenses for the present publication by public means is a paradox that may, at least in part, reflect a significant change in political priorities.

Oslo, 25th September, 2016

Literature

The literature on the flood of Florence in 1966 is vast and beyond the scope of this publication. The following titles merely refer to the text or the illustrations, or are of relevance to the Nordic Centre in particular. Newspaper articles have been omitted.

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Batini 1967 (anonymous, reproduced from): p. 34 (top).

Bazzeccchi: p. 63 (top left).

Bencini, Rafaello: p. 65 (top).

Bjarnhof, Mette: pp. 50 (upper right), 70 (left).

Cains, Anthony: pp. 64 (right), 65.

Comitato Trentennale dell'Alluvione di Firenze 1966: p. 7 (right).

Frigi, Fulvio: pp. 7 (left), 39 (top left).

Gieffe, Archivio Storico: p. 3.

Losacco 1967 (reproduced from): p. 6.

OPD archive/Soprintendenza alle gallerie: pp. 40 (top right), 48 (bottom left and right), 53 (top), 55, 58 (top), 59 (top left, bottom), 60-61 (all).

Perugi, Liberto: p. 4 (top).

Piacenti 2009 (reproduced from): p. 51.

Plahter, Unn: p. 14 (right).

Postcard (anonymous): p. 66.

Private: p. 70 (right).

Unknown/from private photo album: p. 69 (top and middle).

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Erling S. Skaug (b. Oslo 1938) studied art, art history and conservation in Oslo, Brussels and Rome 1959-68, graduating in paintings conservation. Conservator at Nasjonalgalleriet, Norsk Folkemuseum and Universitetets Oldsaksamling, all Oslo, 1968-97. Doctoral dissertation *Punch Marks from Giotto to Fra Angelico, I-II*, 1994. Professor in conservation and art technology, University of Oslo 1997, emeritus since 2009. Head of *Centro Nordico del Restauro a Firenze* 1968-69. Member of Ministry-appointed committee to estimate the need for conservation in Norway and propose a new study programme in conservation 1979-83. AATA regional editor for Norway 1976-95, active within ICOM-CC and co-founder of ENCoRE. Member of the Norwegian Academy for Science and Letters, hon. member of NKF-N. F-IIC, F-Villa I Tatti 1988-89 and visiting professor 2009. Order of *Stella della Solidarietà Italiana*. Numerous publications.

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