Project 'Conservation of Modern Art'

Proceedings of the presentation of the project on 12 May 1996

Foundation for the Conservation
of Modern Art

Project 'Conservation of Modern Art'

Proceedings of the presentation of the project on 12 May 1996

Foundation for the Conservation
of Modern Art, 1996

Colophon

Proceedings of the presentation of the project 'Conservation of Modern Art' on 12 May 1996 /
Verslag van de presentatie van het project 'Conservering Moderne Kunst', gehouden op 12 mei 1996

Editors / Redactie: Marina Raymakers, Jaap Mosk

DTP / Vormgeving: Jaap Mosk

Translations / Vertalingen:
Hazel Wachters-Patmore M.A. (English Language Services),
Hugo Verschoor, Caecile de Hoog

The illustrations were provided by the authors.
De illustraties zijn ontleend aan dia's en foto's die door de auteurs ter beschikking zijn gesteld.

Comments and questions may be sent to the authors and to Dionne Sillé, project coordinator.
Opmerkingen en vragen kan men richten aan de auteurs en Dionne Sillé, de projectcoördinator van de Stichting Behoud Moderne Kunst.
Gabriël Metsustraat 8, 1071 EA Amsterdam, The Netherlands
Tel. +31(0)20 673 51 62, fax +31(0)20 675 16 61

Cover photograph: Piero Gilardi, *'Still life of Watermelons'* (1967), detail, foam plastic. Dimensions 154 x 306 x 25 cm.
Collection Museum Boijmans Van Beuningen. Photo: Lydia Beerkens

Contents

Foreword 5

The 'Conservation of Modern Art' project 7
Dionne Sillé, project coordinator of the Foundation for the Conservation of Modern Art, Amsterdam

The biography of a machine. Problems with the conservation of Jean Tinguely's *Gismo* 13
Lydia Beerkens, conservator/investigator of the Foundation for the Conservation of Modern Art, Amsterdam

Changing perspective. The value of materials 20
Marianne Brouwer, curator of the Kröller-Müller Museum, Otterlo

The conservation of modern art, a question of interdisciplinary cooperation 29
Pieter Keune, director of the Foundation for Artists' Materials, Amsterdam

'The fruits of a Gilardi.' The conservation of 'Still life of Watermelons' 33
Piet de Jonge, curator of the Museum Boijmans Van Beuningen, Rotterdam

Investigation of plastics using infrared spectrophotometry. Black, white and infra-red 37
Thea van Oosten, conservation scientist of the Central Research Laboratory for Objects of Art and Science, Amsterdam

Concept or fetish, the theoretical decision process in the conservation of modern art 41
Ysbrand Hummelen, coordinator of Conservation and Restoration Research of the Central Research Laboratory for Objects of Art and Science, Amsterdam

"A balloon of meaning around the object"
Tony Cragg about his work 47
Tony Cragg, artist, Great Britain

Foreword

September 1995 saw the start of the project 'Conservation of Modern Art'. The project aims to investigate the (im)possibilities in the field of the conservation of 'non-traditional objects in contemporary art'.

During the initial period we received many inquiries. Therefore the Foundation for the Conservation of Modern Art organised a presentation on the project which took place at the Kröller-Müller Museum in Otterlo on 12 May 1996 and was attended by 250 people.

The speakers were all closely involved with the project and associated with the participating institutes. Their lectures are assembled in this volume and together they give a good impression of how the project is carried out, its aims and the expected results. In the first lecture the project is described in general terms. The other lectures focus on specific themes and dilemmas, and the research into the conservation of the pilot objects chosen.

The day was concluded with a lecture given by the artist Tony Cragg about his work. His 'One space, four places' is one of the project's pilot objects. As his interesting and lively talk is indirectly concerned with the theme of the project, it is included here in its entirety.

The project will not be finished until the end of December 1996. The concrete results will appear in 1997 in a separate publication.

The project is financed by the *Mondriaan Stichting*. The participating *museums*, the *Centraal Laboratorium voor Onderzoek van Voorwerpen van Kunst en Wetenschap* and the *Stichting Restauratie Atelier Limburg* all gave financial support as well. This publication was realised with the support of the *Centraal Laboratorium*. We are grateful to all individuals and institutes who contributed to the project and its presentation.

Evert van Straaten
Chairman Foundation for the Conservation of Modern Art

The 'Conservation of Modern Art' project

Dionne Sillé, project coordinator of the Foundation for the Conservation of Modern Art

The Conservation of Modern Art project was set up as the result of discussion between the curator of sculpture of the Kröller-Müller Museum, Marianne Brouwer, and free-lance conservator Birgit Knöpper. The discussion concerned the conservation of a work by the artist Sol LeWitt, which is attached to a wall. The work is smeared with dirty finger-marks and the question was how it should be conserved. Marianne Brouwer held the view that it could be made again, as it was a work of conceptual art. The concept is the work in written form and this can be executed by others. Thus the material work on the wall is not the work itself but only a representation of it. Birgit Knöpper objected to this view of restoration and said that it was not in line with present codes of restoration ethics.
As other objects in the collection also raised conservation problems for which there were no ready-made solutions, Marianne Brouwer took it upon herself to ask fellow curators whether they too were faced with the same problems. This indeed proved to be the case. In 1993 a working group was set up consisting of six curators and conservators from a small number of museums of modern art. All could point to various relevant cases within their own museums. At the meetings there were lively, sometimes even fierce discussions concerning the dilemmas confronting curators and conservators when they seek to tackle the problem of decaying collections. Within six months the working group had been enlarged to include representatives from the main museums of modern art. The new group conducted a survey of problems arising in the conservation of modern art.

Problems in the conservation of objects of modern art

In the preparatory phase of the project the following major difficulties were noted:

1. There are no criteria for the conservation of 'non-traditional objects in modern art'.
2. There is little insight into the nature and extent of the use of new materials and into the ageing of these materials.
3. Knowledge concerning the composition of modern materials is almost totally inaccessible.
4. There is in the Netherlands an acute shortage of conservators for modern art.
5. There is no inventory of any know-how which may exist either in the Netherlands or elsewhere.

After definition of the problems, the working group set about creating a concrete plan in order to find solutions. A project entitled *'Conservation of Modern Art'* was developed. It is sufficiently concrete but also takes into account the complexity of the conservation problem.

The structure of the project

The following three features are important aspects of the project:
The research is based on ten pilot objects. These objects together present a range of problems of an ethical and aesthetic nature and problems relating to the characteristics of materials. The second feature is the interdisciplinary approach[1]: only when conservators, art historians, scientists and even legal experts and philosophers work together can all aspects of conservation problems be dealt with. This interdisciplinary approach has taken the form of two working groups to back up the research: one group is concerned with theoretical problems while the other studies the practical problems related to the materials. There are conservators, curators and experts on materials in both working groups. The actual research on the objects is carried out by two conservators/researchers. Lydia Beerkens performs the major part of the research; Kees Aben, the conservator of the Stedelijk Museum in Amsterdam, works on the project for one day a week. The third feature is aimed at the future.
In addition to the actual research into the pilot objects, the working groups are developing a methodology for conservation which can be used by curators and conservators after the project has been completed. To this end two different models are being designed: the first is a model for registration and documentation for the purposes of conservation. The second model concerns the decision process with regard to conservation.[2]

The objects

Ten objects, made of non-traditional materials, were selected for the research. A brief outline is given of the conservation problem applying to each work of art.[3]

1. 'Città irreale', Mario Merz 1968 (Stedelijk Museum Amsterdam)
   This suspended object consists of a triangular metal frame covered with gauze. Wax has been applied to the gauze. Neon tubes pushed through the gauze form the words 'città irreale'. There is serious ageing and deformation of the material. The neon tube is becoming discoloured, the beeswax is disintegrating and the tulle discoloures and breaks.

1. See article by Pieter Keune
2. See article by Ysbrand Hummelen
3. The investigation backlogs ascertained before the start of the investigation

2. 'Gismo', Jean Tinguely 1960 (Stedelijk Museum, Amsterdam)
   Tinguely's machine is made up of a large number of iron parts, including a rectangular framework and wheels of various sizes. There is evidence of rust formation, wear and loss of material and parts.

3. 'Still life of water melons', Piero Gilardi 1967 (Museum Boijmans Van Beuningen, Rotterdam)
   The melon field, originally painted in bright colours, is made of foam plastic. The foam plastic has dried out. Any form of transport or contact may cause a piece to break off. An additional problem is that the object retains dust or perhaps even attracts it.

4. 'M.B.', Marcel Broodthaers 1970 (Bonnefantenmuseum, Maastricht)
   The black letters M.B. are shown in relief on a pair of plastic plaques. One plaque has a black background, the other a white background. The plastic is degrading. The nature of the material is unknown.
   The plaques are suspended by means of small circular holes. Owing to the degradation of the plastic the holes are now very brittle; one has already broken.

5. 'One space, four places', Tony Cragg 1982 (Van Abbemuseum, Eindhoven)
   The object represents a table and four chairs. This 'furniture' is made from many different kinds of waste materials, including various plastics and sponge. The materials used are rapidly disintegrating.

6. 'Morocco', Krijn Giezen 1972 (Frans Halsmuseum, Haarlem)
   The object is a chipboard cabinet covered with fabric and containing many different items, such as drawings, tools, a bird and a bunch of herbs. The items are attached with wire. Chipboard is acidic and is damaging the fabric, the wire is rusting and many of the items have disintegrated.

7. '59-18', Henk Peeters 1959 (Netherlands Office for Fine Arts, The Hague)
   The object is made of foam rubber, a material much used in the 60s and 70s. The foam rubber is degrading, as a result of which cracks have appeared.

8. 'Ice machine, Willem Barents wintering on Novaya Zemlya', Woody van Amen 1969 (Centraal Museum, Utrecht)
   The machine is a large cabinet made of aluminium and perspex. It contains: fluorescent tubes, mechanical parts, two compartments filled with hay, a freezing unit now no longer working, a perspex drip-tray and imitation wooden blocks. Insects have got into the hay and the freezing unit is broken.

9. 'Campi arati e canali di irrigazione', Pino Pascali 1968 (Kröller-Müller Museum, Otterlo)
   The object consists of corrugated asbestos sheets, covered with a layer or earth, and iron basins filled with aniline blue water. Asbestos, used in the sheets, is carcinogenic; some of the basins are so rusty that they can no longer be filled with water.

10. 'Achrome', Manzoni 1962 (Kröller-Müller Museum, Otterlo)
    The Achrome consists of tufts of glass wool attached to polystyrene. The flat background is covered in red velvet. The work is protected by a perspex cover. Despite the cover, the glass wool has become very dirty: the hairs have stuck together. It is not clear whether the work can be cleaned and if so how this should be done.

The method

The method used in the project is described here according to the path worked out for the pilot objects.
The research on each object begins with an intake discussion in the museum which owns the object. The aim is to find out as much as possible about the object during the intake: about the artist, his methods, the material used, the previous owners of the object, its exhibition and restoration history. Members of the project team from the Foundation for the Conservation of Modern Art conduct the intake discussion with the curator of the museum and any other museum staff who may know something about the object. This may be the conservator but it may also be someone from the Technical Department who has been responsible for the maintenance over a number of years or the director who bought the object and may perhaps remember exactly what it looked like at the time of purchase. These discussions always reveal just how much information is missing, particularly concerning the materials and techniques used. Such information is indispensable, both in order to ascertain what condition the object is in and in order to define the significance of the material and the artist's methods. In order to fill lacunas, various sources outside the museum are consulted - first the artist himself, in order to find out what materials and techniques he used when making the object and also to find out what he thinks of its present condition. Unfortunately this is no longer possible for all of the ten pilot objects. Four of the ten artists have died (Tinguely, Pascali, Manzoni and Broodthaers). Curators and conservators of other museums in the Netherlands or elsewhere, as well as artists' assistants and gallery owners are also contacted.

While the history of the object is being investigated, the research relating to the material and the art historical research also start. Scientific researchers investigate the nature and degradation of the materials used. The conservator/researchers on the project devote considerable effort to describing the condition

of the work as objectively as possible. The literature is studied in order to place the object and the artist in an art historical context. For this purpose a reader is compiled containing articles about the artist, the movement of which he forms part and the object under investigation.

During this phase the relevant expertise is also sought out, depending on the conservation problems posed by the object. If there are experts on specific problems, we consult them or invite them to take part in the working groups. For example, the metal conservator Evert Moll was invited to the meeting on 'Gismo' by Tinguely; Brenda Keneghan, the plastics specialist of the Victoria and Albert Museum in London, was asked at the meeting on the plastic objects by Gilardi and Peeters.

After the preparatory research, the meetings of the theoretical and practical working groups take place, always in the museum which houses the object under discussion. The curator provides an introduction on the artist, his work and his place within cultural history. The conservator/researcher gives details concerning the technical state of the material. The theoretical working group is the first to discuss the conservation problems. The present condition of the object is assessed and members of the group discuss what features of its appearance should be aimed at. General questions are also raised, such as: "How disturbing is it if certain parts are missing?" or; "Is the work so degraded that this affects its significance?" or: "Can the work still be on display to the public?" After the discussion the conditions governing the conservation of the object are determined, for example: "The work may be cleaned, but the present structure must be preserved." or: "No parts of this work may be replaced." or: "The work can be displayed in its present state, provided the broken parts can be repaired."

From these starting points relating to conservation, the theoretical working group formulates questions for the practical group. If, for example, it has been decided that the work should be cleaned without altering the structure, the practical group is asked whether this is possible and what methods are available. The practical group particularly studies the ageing of the materials used in the objects and also answers the questions from the theoretical group.
Not all questions can be answered immediately, however. For the asbestos problem in 'Campi arati e canali di irrigazione' by Pascali, Pieter Keune first consulted the literature. Subsequent to this, the Safety department of the University of Amsterdam was contacted for advice. In order to obtain the final word on possible danger from the asbestos in the work, TNO[4] was asked to carry out an investigation.

4. TNO, Toegepast Natuurwetenschappelijk Onderzoek (Netherlands Organization for Applied Scientific Research)

Further research is carried out after the meetings of the working groups. The most important part of this phase, however, is the research into possible methods of conservation. The theoretical working group will eventually take the final decision on conservation and advise the owner of the object accordingly. A research report is written covering all aspects of the research for each object.

In conclusion

The project will last until the end of 1996. By the end of this period it is hoped that more knowledge has been gained and that a research model for the conservation of 'non-traditional objects of modern art' has been developed. The Foundation for the Conservation of Modern Art considers it vitally important for the results of the project to be the subject of discussion - in the Netherlands, in a wider circle than the members of the working groups, as well as with international partners. The results of the project will therefore be published in 1997 and an international symposium on the conservation of modern art will be organized.

The biography of a machine

Problems with the conservation of Jean Tinguely's Gismo

Lydia Beerkens[1], conservator/investigator of the Foundation for the Conservation of Modern Art

The work of art *Gismo* (1960) by Jean Tinguely (1925-1991) from the Stedelijk Museum collection is one of the ten pilot objects of the Conservation of Modern Art project. *Gismo* is an early work of Tinguely, a huge machine of more than two meters high and almost six meters long, made of scrap metal. Through driving-belts, an electric motor sets all sorts of axles in motion. On the axles wheels are attached with hammers which make sounds on old pans, tins and other metal objects. Since its construction *Gismo* has fallen into decay. Research into the possibilities for conservation has not yet been concluded and so no decisions have yet been taken regarding the treatment of *Gismo*. A description of the condition of the work is given below.

The problems

Gismo is now 36 years old. When the object is in motion, it creaks and squeaks on all sides and this forms the most important problem of the object.
The work looks like a machine: it has components and runs and moves on electricity. But *Gismo* is a useless machine: it does not make anything. It has been constructed from metal components collected apparently arbitrarily and welded into one whole.
Gismo is cannot be dismounted like a normal machine. It is a one-off art object supposed to work on electricity, to move and to make sounds. Tinguely modelled rusty scrap material into the ramshackle construction which resembles a machine, and as a result it has not been able to function properly from the very beginning. To keep *Gismo* going, work had to be done on the object frequently, varying from small alterations to major repairs. Thus, *Gismo* has constantly changed bit by bit in the course of the years; not only has the way of moving changed but also its sound.
Now that the work has to be restored, quite different questions need answering. How much does the object differ in composition and appearance from its initial state? What meaning must be attached to the interventions Tinguely himself made with *Gismo* in the period that the work was still his own? Does *Gismo* in the present state still convey the intention of the artist? These questions can only be answered if the history of the object is known.

1. Because of the pregnancy leave of Lydia Beerkens this lecture was read by Kees Aben on 12 May 1996

The most important element in Tinguely's work is movement: absurd movements with sound made by strange machines composed of recognizable components, 'objets trouvés'. The movements can best be seen in more than 30 different wheels which are supposed to revolve. The origin of the material of the wheels and the sounding parts can mostly be gathered from their colour and form. Objects like pans, dishes and tins can be recognised. One can even see a military helmet.
In the past, only the 'static' appearance of *Gismo* was recorded in the traditional medium of photography. Only in 1984 were moving images with sound of this work of art recorded. Now it is only possible to trace and to date the optically perceptible changes; this means that changes in drive and rotation, and the consequences for the sound cannot really be traced.

Method of working, procedure

Decision making on the conservation treatment follows a number of steps. First the life history is mapped out as completely as possible so that a comparison of the present situation with the original state is possible. Besides this the extent to which the work of art still reflects the intention of the artist, is investigated. The possibilities for repair are discussed as well: can the repairs be carried out in practice? What aesthetical results are to be expected? What is ethically permissible? The starting point for the investigation was the discussion with Jan Hein Sassen, curator, and Kees Aben, a conservator in the Stedelijk Museum. In this discussion as many data as possible about the artist and the work of art were collected.
Ad Petersen, curator in the Stedelijk Museum when *Gismo* was purchased and a friend of Tinguely, was interviewed as well as Herman de Waal, a technical staff member who frequently carried out minor repairs on *Gismo* in the past. Archives of the different museum departments were consulted. In the administration archive letters about the purchase of *Gismo* in 1974 and about the correspondence with Tinguely regarding the damage in 1980 came to light. The photography department possesses, in addition to standard photos of *Gismo*, room surveys of exhibitions and photos of Tinguely at work.
The audiovisual department provided video tapes of *Gismo* in action during an exhibition in 1984.

Life history

On the basis of several photos, many alterations to the work have been roughly dated. *Gismo*'s 'biography' can be divided into certain periods in which the work each time has a different appearance.

From 1960 to the early seventies
In the spring of 1960 Tinguely was making *Gismo*. On some photos, made in Tinguely's studio, we see the imposing *Gismo* rigidly standing upright in the

court. The rectangular frame is the 'torso' on which the motor, axles and the different objects have been mounted. It stands with 'legs' on two axles, a front axle and a rear axle, with two large and different wheels. The attention is particularly drawn to the austere horizontal arch at the top, the back and the neck as it were, on the front of which a bicycle fork, a hammer and a saucepan have been mounted. Above this is a huge construction with long drive-belts setting the hammers at the front in motion. Touching is the undercarriage of a pram, at the left side of *Gismo*, going forward and backward and actuated by a bar which moves when the work of art is in motion. The work forms one whole.
In a motley parade *Gismo* was pulled along, together with other works of art, through the streets of Montmartre to a gallery for the first exhibition.
There are also photos of that parade and exhibition.
After that, the work remained in possession of the artist until it was bought by the Stedelijk Museum. Just before this acquisition, the work had been exhibited a couple of times. On some photos from 1971 and 1972 we see that *Gismo* has been partly altered: two important construction elements are lacking.
The structure on top with long drive-belts and one of the two wheels on the rear axle are gone. The long arch has been made detachable. Further, some objects functioning as sound-boards have been replaced by other ones and the motor has been renewed.
It is very well possible that Tinguely adapted the construction himself so as to facilitate transport to exhibitions. Tinguely's machines had a lot to suffer when they stood outside for a long time near his studio in Paris.

From 1974 to 1981
In 1974 the Stedelijk Museum bought *Gismo* from the artist. It was photographed from different sides. This was the beginning of its museum history.
In 1980 the whole construction was seriously damaged in transit. Pans and tins were dented or broken, the helmet was loose, many wheels were pulled out of position and were not attached to the axles any more and the loose detachable arched component was sharply twisted. It was not possible for Kees Aben to restore the work and the museum called in Tinguely himself. Tinguely was, just like his assistants at a later stage, used to working on his machines regularly and to carrying out repairs, mostly to get them going for exhibitions.
In 1981 Tinguely repaired most of the damage to *Gismo* himself, together with his assistant Sepp Imhof. Some photos made before Tinguely had finished this job, showed *Gismo* in a highly dilapidated condition. The whole looked unstable and ramshackle. The work of art was only a mere shadow of what it was in 1960.

The present
In outward appearance, *Gismo* looks now roughly like it did in 1974. It can still run and make sounds when the motor is provided with current. However, the entire construction is unstable and seriously weakened.

Axles and wheels are slanting in such a way that the drive-belts come off the wheels, and as a result of this the machine comes to a halt. V-belts have been replaced by thin synthetic chords. A number of drive-belts take another route and move more tightly over the wheels. The combination of the slanting position of the axles and the tight drive-belts causes serious wear of the wheel rims and the axles. In the past several axles were broken because of wear and were welded.
The construction is rather dusty, and in addition the rust formation is striking. It will look more and more 'brown' as the rust increases. The different and sometimes conspicuous colours of the 'objets trouvés' will disappear slowly.
The sounding parts have holes in places where hammers repeatedly hit the same spot. In the past a pan or tin was occasionally turned a quarter, which is why there are dents and holes on more sides of these parts.
Gismo makes an old and 'tired' impression when the machine is in action. It is not known how much the movement of the wheels, which is dependent on the order in which the drive-belts set the axles in motion, has been changed.
The same applies to the rhythm and the order in which hammers fall on the sounding parts. This condition forms the basis for the conservation research.

Considerations and starting points for the decision process on the conservation of *Gismo*

Once a clear image of the life history has been formed and we know what information is still lacking, it is possible to say what *Gismo*, 36 years old now, should look like.
The museum point of view is important in this respect: for the Stedelijk Museum a stationary machine would not be acceptable, it would not 'live' then. With this starting point in mind, we must look for possibilities for conservation.
(Foreign) museums, which have similar mechanical objects made by Tinguely in their collections, have been contacted to gain an insight into their conservation treatments. Conservators from the Musée National d'Art Moderne, the Centre Pompidou and the Kunstmuseum in Basel have been consulted. In addition, there is extensive contact with the curator of the Jean Tinguely Museum in Basel which will open this autumn and which has collected a lot of historical material about Tinguely. In the museum his assistant Sepp Imhof is carrying out restorations on the works of art.
Assuming that movement and the accompanying sound are the chief functions of the work, active intervention in the work of art is essential to keep the work in operation. On the other hand, we have the choice to accept deterioration and to retain the object in its present state as a stationary structure.
These two most extreme possibilities and all the possibilities in between are discussed in both a theoretical and a practical working group.

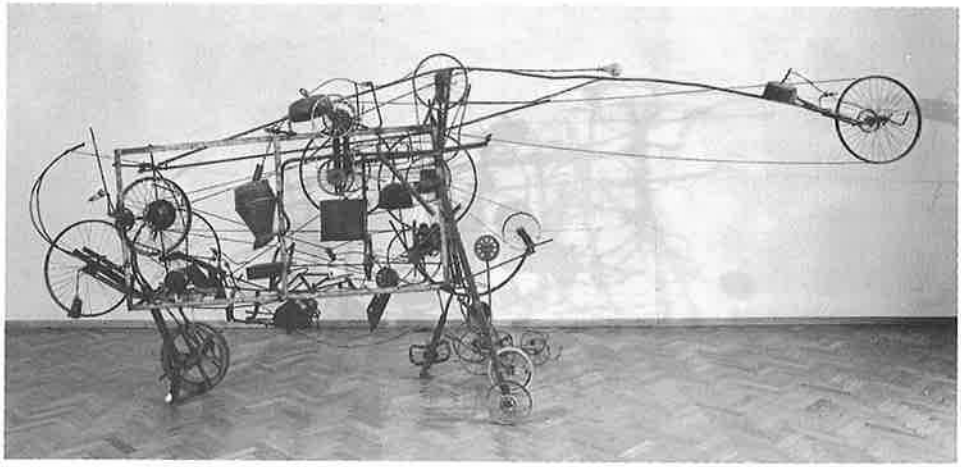


Fig. 1. *Jean Tinguely, 'Gismo' (1960), photographed in 1974. Dimensions ca 200 x 560 x 170 cm, scrap material.*
Photo: Stedelijk Museum Amsterdam.
© Jean Tinguely, 1960. c/o Beeldrecht Amsterdam, 1996

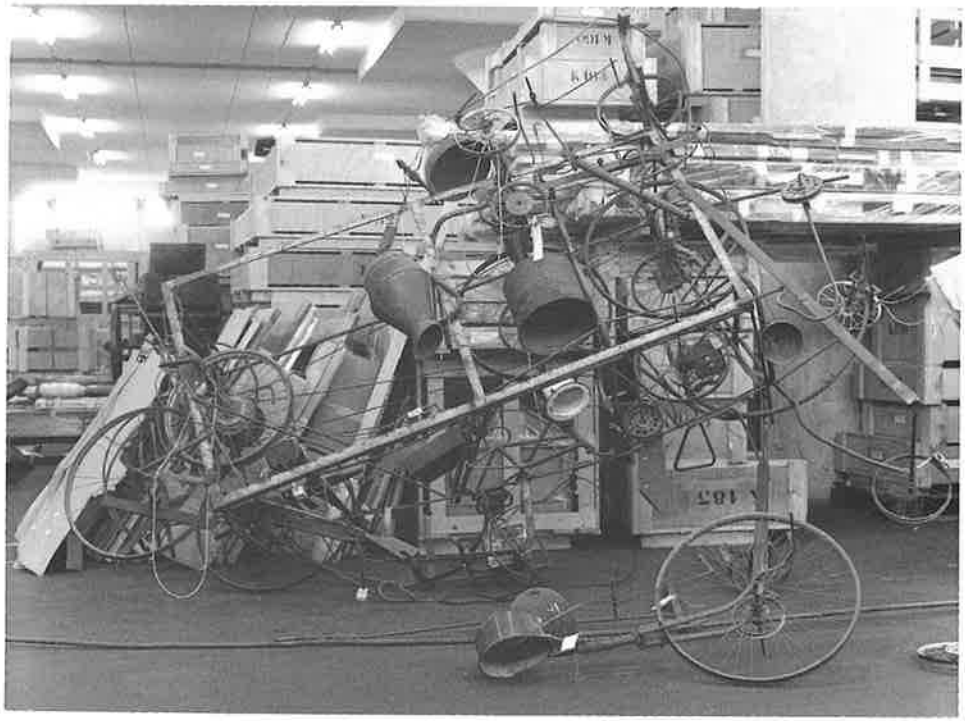


Fig. 2. *'Gismo' suffered serious damage during transport in March 1980.*
Photo: Stedelijk Museum Amsterdam
© Jean Tinguely, 1960. c/o Beeldrecht Amsterdam, 1996

In the former group, in which the art historical meaning of works by Tinguely and more specifically *Gismo* is portrayed, views are expressed on how best to do the work justice. Not only the outward appearance but also the movements and operations of the machine play an important part. The practical working group lays down the present condition, and, to the best of its ability, the original material-technical condition of *Gismo*.
If the machine is to be restored in such a way that it can operate again without the direct and serious wear, many axles will have to be straightened in the construction. The strength of the construction itself has to be investigated, and it has to be raised and put on its 'legs' again. The question here is whether original welding may break up. The welding was made by Tinguely or his assistant and optically forms one whole with the machine. In the past, worn-out axles were sometimes provided with thick new welding. This was carried out in a careless way, as Tinguely did.
The most important thing to keep in mind is that 'going back' to any previous state is never a possibility. The work of art has led a life and has a certain age and the latter will only increase. It is possible, though, to carry out improvements and additions by means of active conservation or limited restoration, as a result of which the work will look in outward appearance more like its so-called original state. Films and tapes on which images and sounds of Gismo are recorded do not describe its first periods in life. The recovery of movement and sound therefore actually amounts to an 'acceptable' reconstruction.
Quite different aspects, too, play a part in the decision making. Those who witnessed the culture of the sixties in which Tinguely flourished, may take another standpoint regarding restoration than the observer who has instinctively distanced himself from Tinguely's work. An interesting question is what part the artist can play in the conservation of his or her work. During his lifetime Tinguely was frequently hired to take part in the setting up of exhibitions and in particular to set machines in motion and to carry out repairs to his work. Must we take a more reserved standpoint regarding active interventions now that the artist is not alive any longer?

In conclusion

Choices for the conservation of the construction have not yet been made. Additional material-technical research, in which theoretical conditions for restoration and practical restrictions are formulated, must first be carried out. After outlining the (im)possibilities for conservation, the discussion can be continued, after which a decision can be made.

Changing perspective

The value of materials

Marianne Brouwer, curator of the Kröller-Müller Museum

Throughout the existence of Western culture, artists have used valuable materials. Sculptures, paintings, frescoes, mosaïcs, were made of bronze, gold, marble or the best pigments, so that they would resist the ravages of time and endure for many centuries in the places for which they were conceived: churches, palaces, squares, even the bourgeois interior.

But suddenly, at the beginning of this century, a radical change took place, a change which occurred in the space of barely thirty years - between 1884 and 1914 - and which completely overthrew the previous tradition. Sculpture descended from its pedestal, painting broke out of its frame and from that moment on, art could be made of any available material: fat, straw, hardboard, asbestos, plastics, gunpowder, video, footage, hair or fish. It may be ready-made, from soup cans or light tubes or consist of immaterial materials such as sound. It can be earth, water, fire, air. And when artists do use traditional materials like stone or paint, the relationship between the artist and his material is of a completely different order. But above all, and this is totally new in the history of Western art, art can be the artist himself: his life and body *(Fig. 1)*, his thumbprint, his secretions and his breath - his pneuma, as the Greeks called the air with which the Creator blew life into the first man and through which man became something of a creator himself, a fabbro, a maker, an artist in truth *(Fig. 2)*.

Why was there this sudden change in art? What induced artists to start working in a manner so different from that of their predecessors?

Why should we put to put up with a balloon from Manzoni today when we had Michelangelo's Sistine Chapel in the past? In order to convey something of that change, I would like to explain the value of materials, not in a financial sense, but in the sense in which one speaks of the value of colour, for example, or its volume or weight, i.e. the significance of materials.

But first I have to go back in space and time. Since the Renaissance painting had been a window with a view, opening onto imaginary world. The means by which that view was constructed was the art of perspective. A perspectival analysis of 'The Music Lesson' by Vermeer shows how this was achieved: by creating a horizon, a vanishing point and lines, called orthogonals, which converge on it *(Fig. 3)*. It was an intricate technique, full of complicated mathematics. Framed by the surrounding architecture, deepened by repoussoirs and guided by rays of light and the layering of color, perspective was constructed so as to lead the spectator into the space of the painting. That space was a world of its own, an illusory or ideal world, and it was therefore important that it looked as real and tangible as possible, perhaps creating all the more

yearning for it. This can be seen in Vermeer, the quiet Dutch interior of the 17th century, being perhaps the purest illustration of what Simon Schama has called the embarrassment of riches.

Three centuries and ten years later, in 1972, the Dutch artist Jan Dibbets designed by the same means a perspectival space exactly the reverse of the Renaissance one. *(Fig. 4).* In 'Universe, World's Platform' the orthogonals, instead of going out towards the vanishing point in the distant horizon, converge towards the spectator. The horizon has become a curve and the vanishing point of the painting is the spectator's own eye. In fact, the work itself shows what the human eye perceives and also how it perceives. What this painting really says is that our point of view, which we would perhaps like to think of as universal, is in fact an outcome of our possibilities of perception (and the impossibilities).

Dibbets shows the same perspectival point of view, but now as a complete panorama, in 'Self-portrait as Photographer' *(Fig 5).* The panorama is shaped by photographs which seem to form the diaphragm of a camera. In the centre of the circle is a black dot. That dot has multiple meanings at one and the same time: it is the centre of the painting, the eye of the artist, the lens of the camera and the vanishing point of the image.

Compare that image with the cupola of the baroque Church of the Holy Shroud in Turin, built by Guarino Guarini between 1668 and 1964 *(Fig. 6).* One sees a circle, built from triangular elements, and in the centre, high up in the cupola, a triangle with an eye in its centre as its vanishing point, surrounded by rays of light. There is the same build-up an lay-out of space, but with one huge difference: the eye in the centre of the cupola is the eye of God.

I chose a few random images as examples for comparison, but what I in fact want to demonstrate with this excursion into perspective is something much more all-embracing: the fact that in art we are dealing with an element which surpasses a mere technique of painting or sculpture; we are dealing with an element by which we establish the relationship between ourselves and the world that surrounds us. Art not only attempts to express that relationship, but also to give it meaning; it is at one and the same time a symptom of that relationship and its metaphor.

In Dibbet's painting one sees something that certainly in medieval days would have been considered heresy or at least blasphemy: he has replaced the eye of God with his own human eye.

Imagine what this change really stands for: within three centuries, the span that separates Modern Times from the Renaissance, God has disappeared from the centre of the universe and man has taken his place there instead.

This did not just happen by itself nor all at once. Science, the machine age, the industrial revolution, the beginning of capitalism - all changed our outlook as to who we are and where we are going. An old order, symbolized bij the relationship between man and his Creator, was overthrown and man found himself alone in a universe where only science - and perhaps chance - could tell him the meaning of existence.

Fig. 1.

Fig. 2.

Fig. 3.

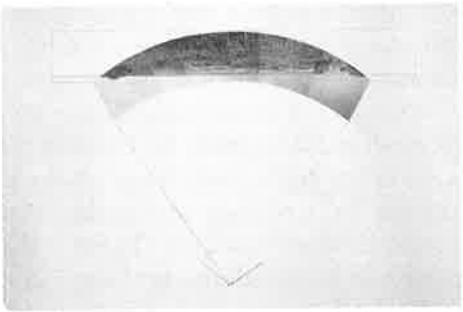


Fig. 4.

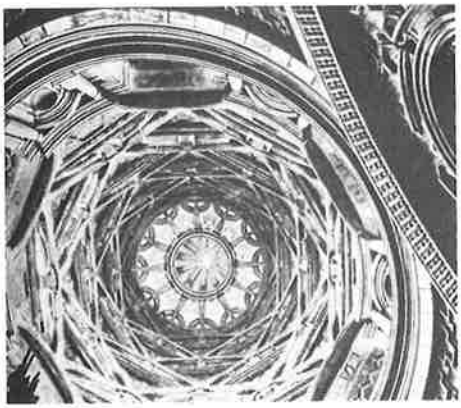


Fig. 5.

Captions on the next page

Captions

Fig. 1. *Joseph Beuys. Coyote: I like America and America likes me. One week's performance on the occasion of the opening of René Block's Gallery, New York, 1974. Photodocument.* © *Joseph Beuys, 1974. c/o Beeldrecht Amsterdam 1996*

Fig. 2. *Piero Manzoni. Fiato d'artista (Artist's breath), 1974. Balloon, wax, wood, steel. Multiple*

Fig. 3. *Johannes Vermeer. The Music Lesson, 1662-'64. Oil on canvas. 74 x 64.5 cm. Coll. H.M. Elisabeth II, Queen of England*

Fig. 4. *Jan Dibbets. Universe, World's Platform, 1972. Colour photographs and pencil on paper. 25.5 x 25.5 cm. 65 x 65 cm. Coll. Stedelijk Museum, Amsterdam*

Fig. 5. *Guarino Guarini. Dome, Chapel of the Holy Shroud. Turin, 1668-'94*

Sensing these changes, the artist needed to establish a new relationship between himself and the world, between the spectator and space. I should like to give you a few examples, all expressing the change in perspective, of what occurred and how it occurred, and also show that it was not free from anxiety or a sense of irreparable loss.

In 1761 the Italian engraver Giovanni Piranesi published his fearful and melancholic 'Carceri d'Invenzione' *(Fig. 7)*, a work that has never been taken very seriously by art historians, perhaps because the official art of marble and oil painting held out for so long. But film directors such as Fritz Lang or Eisenstein and architects such as Libeskind have seen in these 'Prisons' the first truly modern spaces *(Fig. 8)*. Here central perspective is lost; human beings are lost in seemingly endless vaults which all mirror one another. The halls, staircases and corridors have changed into labyrinths, without any possibility of escape. It is as though Piranesi, who was an expert on architecture, is telling us that the old order has come to an end and man now finds himself abandoned to a frightening world, as though punished for some hideous but unknown crime.

Caspar David Friedrich seems to embody the loneliness of man in his masterly painting 'The Monk by the Sea' executed in 1808 *(Fig. 9)*. There are only two planes in this picture: a low, grey foreground and an immense sky, looming, grey and threatening, above the forlorn figure of the monk on the beach. The monk seems to be waiting for something - a sign from the heavens - that may never come.

William Turner did indeed try to create a new relationship with Creation. But he did not do it in the Renaissance manner, by depicting God as a figure.

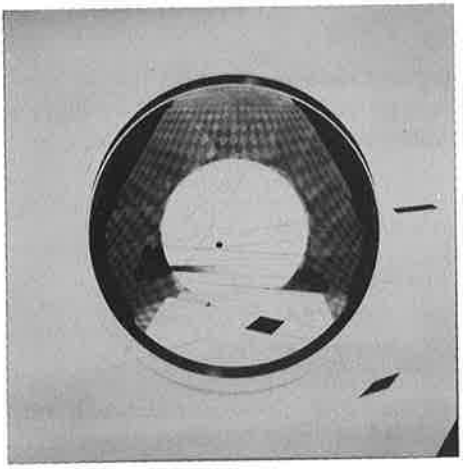


Fig. 6.

Fig. 7.

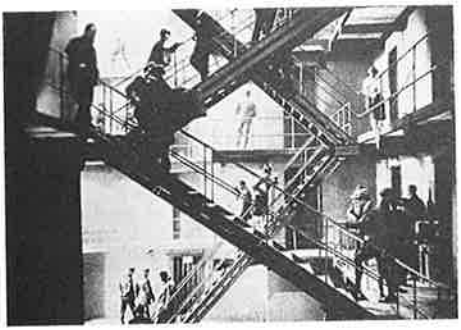


Fig. 8.

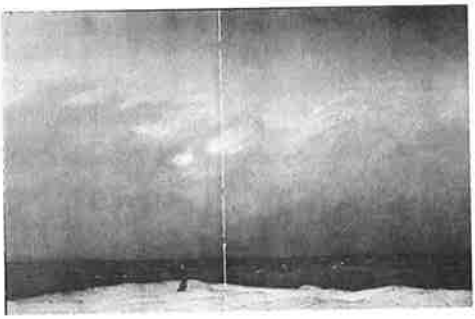


Fig. 9.

Fig. 10.

Captions on the next page

Captions

Fig. 6. *Jan Dibbets. Self-portrait as photographer, 1981. 73 x 73 cm. 185 x 185 cm. Coll. Minke and Penny Winton*

Fig. 7. *Giovanni Battista Piranesi. Carceri d'Invenzione, 1761. Frontispice*

Fig. 8. *Fritz Lang. Spione (Spies), 1927-'28. Scenic photo*

Fig. 9. *Caspar David Friedrich. Der Mönch am Meer (The Monk by the Sea), 1808. Oil on canvas. 110 x 171.5 cm. Berlin Staatliche Museen Stiftung Preussischer Kunstbesitz*

Fig. 10. *Giovanni Anselmo. Entrare nell'opera (To enter the work), 1971. Various dimensions. Photograph with autofocus, reproduced on canvas or on carton. Coll. Australian National Gallery, canberra and private, Turin*

In Turner it is Nature itself that takes God's place. Turner searched throughout his life (he held in fact the chair for perspective at the Royal Academy for some twenty years) to create a renewed perspective which would be able to deal with the mystical awe which he wished to convey through the turmoil of light and dark in his paintings. Man is a nonentity, dwarfed by these landscapes of towering mountains and stormy seas and skies filled with lightning. No longer is painting a window with a view on another world; on the contrary, it sucks the spectator up into its symbolic panorama, which takes on the dimensions of the universe.

All through the nineteenth century artists worked on the 'Wende zur Moderne'. They tried to find a new artistic language with which to express modern times. The following artists serve as examples: Manet, who scandalized his public by introducing daily life, i.e. ordinary people, into classical painting; the Impressionists who did away with the last remnants of classical perspective and created 'flatness' in painting. Cézanne, who rebuilt the plane of the picture through volumes of colour and then introduced a renewed and totally contemporary symbolism into it, by way of 'The Bather'.

In 1884 revolution occurred in sculpture when Medardo Rosso, the master of wax and bronze and of sculptures as radical as they are intimate, created his 'Omnibus' while still a student in Milano. The small wax sculpture has now been lost. The photographs of the sculpture which still exist show the passengers of the bus, ordinary people transfigured into light and shade.

In the same year Rodin's 'Burghers of Calais' took sculpture from its pedestal. The figures in the monument confront the spectator at his own level, as though they were not heroes but ordinary pedestrians themselves.

The message is very specific and very important: gone is the heroic subject, gone the distance between art and life; art has become part of real life at the level of real space. This means that the art object has succeeded in symbolizing a universe of man, ordinary man in the here and now. No longer are we in the world of the 'beyond' to which we are linked by a desire created through perspectival projection. Perspective centres around ourselves. It is up to the artist to make the connection with the rest of the world.
This final turn-about occurred within three decades. Not only was the destruction of 'classical' space declared in the many manifestoes and writings published by the artists; they also establish a new space in painting and sculpture, supported by a theory so strong that it has lasted right up to the present.
In 1912 the Italian sculptor Umberto Boccioni published his manifesto 'Futuristic Sculpture', anticipating his first one-man exhibition at the Rue de la Boétie in Paris in the following year. "There can be no renewal of an art if at the same time its essence is not renewed", writes Boccioni. "It is not simply by reproducing the exterior aspects of life that art becomes the expression of its time ... Sculpture should give life to objects by rendering their extension into space palpable, systematic and plastic, because no one can deny any longer that one object continues at the point another begins, and that everything surrounding our body (bottle, automobile, house, tree, street) intersects it and divides it into sections by forming an arabesque of curves and straight lines ... Naturally we will create a sculpture of environment ... (which will) contain in itself the marvellous mathematical and geometrical elements of modern objects ... We will see, for example, the wheel of a motor projecting from the armpits of a machinist, or the line of a table cutting through the head of a man who is reading ...".
Boccioni is describing here a very new and specific way of organizing space. For all objects, including human beings, are linked to each other by invisible or imaginary coordinates, in which we may discover the old orthogonals of ancient perspective, but rearranged in such a way that they form a type of web which includes all subjects at the same level. And he introduces a word to designate that perspectival space which has since become famous in art: Environment.
At the end of his manifesto there is the almost prophetic passage which created so much upheaval at the time: "It is necessary to destroy the pretended nobility, entirely literary and traditional, of marble and bronze ... The sculptor can use twenty different materials, or even more, in a single work, provided that the plastic emotion requires it. Here is a modest example of these materials: glass, wood, cardbard, cement, concrete, horsehair, leather, cloth, mirrors, electric lights etc. ... It is only by a very modern choice of subject that one can succeed in discovering new plastic ideas ... There can be a reawakening only if we make a sculpture of milieu or environment ...

One must systematically destroy the nude and the traditional concept of the

One must systematically destroy the nude and the traditional concept of the statue and the monument"[1].

Here we are back full circle at the enumeration of materials which I gave right at the beginning. For, although Boccioni was not the the first sculptor to combine different materials, he was the first to use ordinary materials within a modern perspective.
It has been a long path to arrive from Michelangelo to Manzoni's balloon. Through my little excursion I wanted to show that in fact there is an intimate link between the two. Michelangelo depicts in his Sistine Chapel the Creation of Man through the infinitely moving touch between God's outstretched finger and Adam's hand. Manzoni does not paint the act of creation: he acts it out. Alone in the universe, armed merely with a silly balloon, for one fragile moment he is creating that universe with his own breath, showing us the artist's very being, his raison d'être.

Art, at the beginning of this century, came to mean human existence in space and time. From then on, ordinary, everyday and sometimes humble materials, which have never been deemed worthy to represent what was highest or loftiest in our thoughts, acquired a true dignity, as artists charged them with the wondrous meaning life itself has to us.
Between Caspar David Friedrich's 'The Monk by the Sea' and Giovanni Anselmo's 'Entrare nell' opera', created in 1971 *(Fig. 10)*, there is a time span of one and a half centuries, during which modern man, alone, confronting a seemingly meaningless world, decided to enter that world, his opus, his work, once and for all.

1. Umberto Boccioni, *Futurist Sculpture* (1912). In: 'Modern Artists On Art. Ten Unabridged Essays.' Ed. by Robert L. Herbert, Prentice Hall Inc. Englewood Cliffs, New Jersey, 1964, pp. 51, 53 and 56

The conservation of modern art, a question of interdisciplinary cooperation

Pieter Keune, director of the Foundation for Artists' Materials

Materials are subject to change. In the case of materials used in works of art, we often go to great lengths to combat change or stop deterioration. The conservator, whose job this is, assembles the information which he needs for the task: he consults art historical sources, asks for X-rays to be taken, has analyses carried out by the Central Research Laboratory, etc. The conservator can use results provided by many disciplines. Characteristic of this multidisciplinary method is the practical approach. The problem as a whole is divided into a number of smaller problems; various disciplines each independently provide their own information concerning possible solutions. It is the conservator's task to decide which of this information he will use.

The problem

There are, however, a number of difficulties inherent in the multidisciplinary approach: the problem analysis, the specific terminology of the various disciplines and a tendency for experts to interfere in matters outside their own field. An essential element of the multidisciplinary approach is a correct problem analysis: how is the problem to be divided and presented to the specialists? What information is necessary and how can it be interpreted? Conservators now have sufficient expertise to be able to interpret chemical analyses for traditional works of art. The situation is much more complex for non-traditional works. The conservator does not have the knowledge to ask the right questions and the laboratory does not yet have sufficient experience with present-day materials and the techniques used by modern artists.

Jargons

A second difficulty is that each discipline has its own terminology. The jargon used by art historians and the terminology of chemistry are very different indeed. In the case of traditional materials there is now consensus concerning the designation of materials, the techniques used and the forms in which the material can occur. This does not apply to modern art. A material may exist under different names in different countries simply because it is known by a brand name. There is total confusion when different manufacturers each use their own brand name. Wrong decisions may be made if the name leads to misunderstanding.

Unsolicited advice

The third problem in a multidisciplinary approach is the tendency of many specialists to go outside their own field. The conservator who consults a specialist about a particular material often receives unsolicited advice concerning the restoration of the object in which the material has been used - even in the (near) absence of test results of proven long-term validity. The specialist consulted is usually an expert in a field not directly related to the visual arts. It is therefore necessary to ensure that technical data from a different field do not determine whether or not it is possible to restore a work of art.

Interdisciplinarity

In the light of the complexity of problems occurring in the restoration of contemporary visual art, our working group decided to try a different approach. Instead of the usual multidisciplinary approach we are developing an interdisciplinary approach. This is a method in which the complex problems involved in the conservation of modern objects - problems which are no longer within the grasp of a single individual - can at least be approached in a way that offers the least risk of 'wrong' decisions. In this approach the problem is considered as a whole and the final decision is based on a series of smaller intermediate decisions resulting from interaction between the various disciplines. Our method is founded on a theoretical and phenomenological approach, as opposed to the practical and analytical approach of a multidisciplinary process.

I will take as an example one of the ten objects now being studied by the working group, the *Campi arati e canali di irrigazione*, created in 1968 by Pino Pascali and to be found in the collection of the Kröller-Müller Museum. The work includes five metal basins containing blue water. Two of the basins are so rusty that they are no longer fit for display. They can no longer be filled with the coloured water. In the traditional multidisciplinary approach a physicist would try to find out what type of metal the basins are made from and what paint was used on them; the blue colouring of the water would be analysed. The specialist in the ethics of restoration and the art historian would together discuss the necessity of conserving the authentic object; they would argue that the work should be reversible and would consider whether the interventions should be visible or not. The artist's intentions should also be respected. The results of these partial investigations may lead to a decision to sand away the rust marks and passivate the metal at these places. Waterproof paint can then be applied in a grey tint which is only slightly different from the original. The water can be coloured with a mixture of cobalt salts.

Our working group is not happy with this method. The procedure is labour-intensive i.e. expensive, and the method is based on half-measures. The material chosen by Pascali makes his work highly sensitive to corrosion. After a few weeks on display the basins will be corroded again. The problem of artists using a combination of materials which are not compatible is one which frequently occurs in contemporary art. A third problem for the working group was the role of the scientific research. Although cobalt can be indisputably identified, it is impossible to determine its origin. The scientist is not a detective trying to find out what material was used by the artist.

The questions to be asked here are how to come by the required information and how to structure the decisions to be taken. The information concerning the artist's intention may often be much more useful than the analytical approach of the scientific investigation. The problem of the metal basin with coloured water need not be complex. In order to solve the problem, a number of questions should be drawn up in order to determine the subsequent path to be taken. What is presented at this symposium is an interim balance; the method has not yet been fully worked out.

One of the first questions in an interdisciplinary approach should concern the artist's intention. Before technical possibilities for restoration are investigated, it is necessary to examine what importance the artist attached to traditional methods and the types of materials used. If the artist had had the knowledge and resources, would he have made the work (or had it made) from other materials? Following immediately from this is the question of whether the museum should have a copy made. The ethical and legal problems in this connection are considerable. An interdisciplinary method means developing ethical lines of conduct right from the very beginning. These aspects have still hardly been tackled by the working group.

Lack of information

The approach adopted by the working group has already produced one result: the participating museums are realizing that in most cases they lack basic but highly relevant information concerning methods and materials. When buying works of art it should be a priority to compile an extensive list of information on materials and methods. The correct processing of this information is of vital importance in the conservation of contemporary works. Pioneering work in this field is being carried out by Maaike van Rossum as part of a final examination project at the Reinwardt Academie. One important question is the way in which properties of materials should be recorded, so that this information can be used later in order to determine how the property has changed.

The Foundation for the Conservation of Modern Art is divided into two working groups, one of which is theoretical and the other practical.

There is deliberately no division into disciplines. There are conservators and curators in both groups, so that insight can be obtained into the decision process. The theoretical working group will develop an overall step-by-step programme for each object. Each step raises questions to be answered. The questions have to be answered in close consultation with the practical group before a following step can be taken. The demands on the members of the working groups are therefore considerable: each problem has to be discussed on a plenary basis. In order to answer the questions, thinking and formulation should be as clear as possible, each group representing its own position. In the practical working group quite often the ethical code has been found to inhibit the formulation of technical alternatives. The theoretical group, on the other hand, often goes on to consider technical possibilities for restoration, despite the fact that its sole task is to formulate requirements. After six months of an intensive programme of meetings, a number of things have become clearer: not only are materials subject to change; long-standing ideas concerning restoration also need to be relinquished. Interdisciplinary cooperation, as developed by the Foundation for the Conservation of Modern Art, can play an important role in this process.

The fruits of a Gilardi

The conservation of 'Still life of Watermelons'

Piet de Jonge, curator of the Museum Boijmans Van Beuningen

The director of the Boijmans Van Beuningen Museum wrote in a letter to the Central Research Laboratory:
"In 1972 the museum acquired an 'object' of the Italian artist Pierre (sic.) Gilardi, (born in Turin in 1942), of which I am sending you two photographs, one of the whole object and one detail. This 'still life' of watermelons dates from 1967, measures 150 x 300 cm and has been executed in 'foam plastic' (if this is really the correct name for this material). The conservation of this object, and of so many other objects executed in one or several of the new materials and/or synthetics, is going to give us problems. It will dry out, resulting in pulverization which means that fragments are coming off in the event of touching or bumping up against the object."
He wrote this in 1973, one year after the acquisition. Already in that year the Boijmans Museum experienced that modern art is ageing fast.

The Gilardi was leading a strange and pitiful life in our depot. So as to prevent people bumping against it, the museum had a flat socle made under the melons. The object was shown once more in 1979, after which it remained wrapped up in plastic, put on its side to occupy as little space as possible and slowly sagging out like garbage. All my predecessors regarded it as an example of an object from the sixties doomed to decay. In 1983 my predecessor Cor Blok called it a lost cause. In the first year I worked at Boijmans, seven years ago, I came across it resting against the back rack in our depot. Several aberrations from the seventies were stored there, such as a stainless steel open hearth shaped like a baboon. My colleagues told me that it was a hopeless case, a dead duck. Within our collection it occupied a strange place. It can be regarded as an Italian form of Pop Art because of the many and intense colours, the materials and the realistic character, but at the same time Gilardi is to be rated among the first generation Arte Povera. Of both schools we possess important examples: The Gilardi, however, falls somewhat outside these two fields: too much Pop to be really Arte Povera, too much Italian to be Pop.
The work's material problems, occurring in the very beginning, made its solitary confinement in the depot rather permanent.

When the Foundation for the Conservation of Modern Art asked the participating museums to submit an object as a pilot project, this Gilardi seemed to me very suitable. I must confess that I proposed the work with the same despondency about its condition as my colleagues felt.

It also seemed an excellent object to experiment with: after all, since the seventies everybody in the museum had considered it to be a total loss. To be fair, I must confess that I only knew the work as a wrapped up parcel standing in that dark corridor of our depot. I saw the Gilardi unwrapped for the first time in April 1996, during the preparations for the meetings of the Conservation Modern Art project.

We were all very surprised about the intensity of the colours of the 'foam plastic' (a polyurethane ether). The condition of the work was by no means optimal: there appeared to be rather extensive loss of paint as a result of direct contact between the object and the plastic used for packing. There were quite a few cracks in the 'stalks' and the 'leaves' and, what is more, on closer inspection the work made a very dirty and messy impression. However, the greatest impression was made by the colours which were still bright and the remarkably good condition of the 1967 synthetic material. In a catalogue of that year, Gilardi states that he attached great value to the use of the best materials because he wanted to provide the whole world with these sorts of bright and cheerful 'nature carpets'.

The work has a bottom layer, the lawn, made from one large piece of polyurethane, approximately 150 x 300 cm in size and 10 cm thick. The artist cut regular notches in it, and as a result a structure was developed giving the illusion of grass.
The melons and the stalks have also been cut out of polyurethane, and both the grass and the melons are painted. In some places, the artist imitated the structure of crusts with a thick, white paint. He used thin polyurethane for the leaves. At the bottom you can see this is colourless base material, which he had coloured for the purpose. It is not clear whether he did this by dipping or with a brush. One can clearly see that he outlined the veins of the leaves with a paintbrush. He glued all forms, melons and stalks together also using the glue to shape the leaves. The paint, was of a very high quality. The cracks which have appeared, are always within the forms themselves, never on the connections between the two parts. The paint used had an intense colour.
By comparing places where the colours were not exposed to parts which have been more exposed to the light, we see that the work has generally faded only slightly. Of course there has been some ageing, especially in the red sections, but the green seems to have retained its intensity, presumably also owing to the solitary confinement of the work.

Both Thea van Oosten, modern materials scientist of the Central Research Laboratory, and Brenda Keneghan, one of the eighty conservators and research workers of the Victoria and Albert Museum in London, and specialised in the research into synthetic materials, were very much surprised by the relatively good condition of the polyurethane. There are two types of polyurethane: ester and ether. The ester is cheaper but poorer in quality. Fortunately Gilardi used

the more expensive polyurethane ether, in keeping with his statements on durability. Polyurethane oxidizes due to exposure to oxygen and as a result becomes hard and brittle, crumbling at the slightest touch. Deterioration can be limited by storing it in the dark and by sealing it off from air.
Brenda Keneghan stresses that the general condition of the work is extremely good after 30 years. In particular in places where the material is rather thick, such as the melons and the lawn, the resilience and suppleness is reasonably intact. The thinner sheets of polyurethane, which were used for the leaves, have become brittle and are threatening to crumble. The fact that the work stood wrapped up in the dark for such a long time is sure to have contributed to the condition in which it is now. Storage of the work in an environment with low oxygen levels may be considered.
The wrapping in polyester sheeting might have had partly favourable effect, though the contact between the plastic and the parts of the work has also caused damage. The stalks on top of the melons have snapped off because of the tight wrapping and the painting of the melons has been lost in places where there was direct contact. The working group therefore decided to provide the work with a casing, so that the wrapping no longer touches the object itself. It was terrible to realise that the many objects in our depot wrapped in plastic will, as a matter of course, all have to be packed in such casings.
Another conclusion of the working group was that the work should by no means be stored on its side. This, too, aggravated the problem of limited space in our depot. Furthermore specialised equipment would be necessary to store the work in an environment with a low level of oxygen.

On closer examination, it becomes clear that it is not possible to present the work to the public in the state it is in now. It is most remarkable that the current interest in this Gilardi has increased as a result of art produced in the last few years. Artists like Mike Kelley, Paul McCarthy and Robert Gober are greatly interested in realistic representation of articles and objects of everyday use and in our daily environment. For present-day artists nature and the environment are important starting points. This means that within our collection the Gilardi has gained in significance, and there is now a clear wish to exhibit the work and to give it a facelift.
Is it really feasible to make a sensible prediction about the ageing of the material? The unexpectedly good condition of the work is relative: it just looks better than other similar objects. It is difficult to give concrete information about plans to slow down the deterioration. Brenda Keneghan rightly said that they depend on available funds. Is it worth the investment to restore a work that will eventually fall apart? How much money must be set aside for the preservation of the work, the process of ageing being unclear? One possibility is to construct a large box containing Ageless, a substance absorbing oxygen. Another is that the work could be packed in a box containing nitrogen.

These two solutions are expensive. As for the presentation of the work in the museum, it seems to be in opposition to the ideas of the artist to keep the work in a glass or perspex box. It would look like Snow-white, a sleeping work in a glass coffin. Does this mean that it should be taken out of the box again? These are questions we have to ask ourselves and which have to be discussed in more detail.

I think it is important to regard this example not as an exception. On the contrary, in the light of the solution found for this work other problems could be solved. In fairy tales a prince brings the beauty believed to be dead back to life. In reality, an extremely careful restoration is required to give Gilardi's melons only a longer life.

Investigation of plastics using infrared spectrophotometry

Black, white and infra-red

Thea van Oosten, conservation scientist of the Central Research Laboratory for Objects of Art and Science

Introduction

This contribution deals with the role of scientific research into synthetic materials in the Conservation of Modern Art project. What can be investigated, how is it carried out and what are the results?
The works of art in the project are for the greater part made of contemporary materials, of which at best only the brand name is known. Sometimes it is possible to recognize a material group within the synthetic materials by the outward appearance of an object. Some features which can be helpful with this are: manufacture (processing techniques), chronology (from what year a synthetic was first produced), brand name, appearance (foam, solid or foil) and feel (flexible or hard).
Many different synthetic materials have been brought out onto the market in the course of the roughly 100 years that they have been produced. Most synthetics which are now well known and used a lot, such as polyethylene, polypropene, polyester, polystyrene, perspex and polyvinyl chloride had been developed before the Second World War, but it was only in the sixties and seventies that there was a boom in their application. Nowadays there are hundreds of kinds of synthetic materials on the market, each with specific properties for the purpose for which they are made. This does not make them easily recognizable. The complete analysis and identification of a modern synthetic therefore requires different analytical research methods. One of these methods is infra-red spectrometry.

The questions

Questions which may arise when we look at the objects could be: What material did Gilardi use for the still-life of water melons? The inventory mentions foam rubber, but is it really foam rubber and what do we mean by it?
The material of Manzoni's work is described as glass wool and Styropor. Styropor is the brand name for polystyrene foam. Is this Styropor actually a polystyrene? And is the glass wool in fact glass wool or is it perhaps a synthetic fibre?
The synthetic sheets produced by Broodthaers are listed as a polyester. Works of art made of polyester are mostly moulded or strengthened with glass fibre.

The production process of Broodthaers' sheets is described as vacuum-shaped. This is a technique mostly used with thermoplastics, which are shaped when heated. Polyester, on the other hand, cannot be shaped by heat. So what are the sheets made of then?
Answers to these sorts of questions, which all relate to the composition of the material, I shall give, using the example of Marcel Broodthaers' work *'M.B.'*. *'M.B.'* is owned by the Bonnefanten Museum in Maastricht. The object was made in 1970 and consists of two sheets, a white sheet with the black letters M and B and a black sheet with the same letters in white. The synthetic material itself is of a milky white colour: both sheets are white on the back. The black sheet has been painted. It is not clear whether the paint was applied before or after moulding the sheet. The letters M and B and the black edge have been shaped by a mould composed of parts. We know this by the casting marks on the sheet. The sheets have boreholes and are fixed on the walls with screws. They are both warped, the white one more than the black one.
The white sheet is lightly yellowed, more on the back than on the front.
For the conservation of an object it is essential that the composition of the synthetic, the manufacturing process of the sheets and the degradation process of the synthetic are known.

Research into the composition

In analytical research by means of infra-red spectrometry, the absorption spectrum of a small piece of the material to be investigated, the sample, is determined in infra-red light.
Taking samples of art objects is an extremely meticulous job. First it must be worked out where the sample can best be taken, for it should be representative of the part to be investigated; besides it should be carried out invisibly.
Taking a sample in an object which is in perfect condition, like the sheets by Broodthaers, is not simple. In the boreholes of the suspension system, a small piece of the synthetic was cut off with a knife.
Of works of art only very small samples - the size of a pin-head - are taken.
The sample is placed on the sampling surface of an attachment of the spectrophotometer with the help of a stereo microscope. The size of the sampling surface of this attachment is only 0.6 mm^2. Subsequently the attachment is placed in the spectrophotometer, after which the spectrum can be determined.
Just like any organic compound, a synthetic is made up of molecules.
A molecule does not have a fixed structure but is a mobile whole. In all molecules the different atoms carry out all sorts of mutual vibrations.
These vibrations are made visible by the spectrophotometer with infra-red radiation. Each compound will, after the infra-red light spectrum has passed through the sample, show a different pattern. This pattern is just as unique as the fingerprint is for man.
The spectrum of the synthetic of Broodthaers' white sheet shows the fingerprint which corresponds with that of the polymer ASA, a polystyrene

variant composed of an acrylic ester, styrene, acrylonitril and a polybutadiene. This synthetic is known under the brand name Luran S., of which there are many variants; which one is used for Broodthaers' sheets cannot be determined with infra-red spectrometry. Another technique of investigation, such as pyrolysis-GC-MS can determine, if desired, the correct variant.

The manufacturing process

Besides the identification of the synthetic with the help of infra-red spectrometry, knowledge of the process of its manufacture is also essential to give the life history of the object.
In vacuum formation, the technique for making Broodthaers' sheets, a synthetic sheet is softened by means of heat. Then the sheet is put across a mould and all the air is sucked out from under it. Once the synthetic sheet has obtained its shape, the flow of heat is switched off, the vacuum is stopped and the sheet is removed from the mould, after which another sheet can be shaped. With this technique it is possible to shape several sheets using one mould. Indeed, Broodthaers must have made the sheets with the same mould because the irregularities of both sheets are identical and in the same places.

The degradation processes

Synthetic material is a mass product. The aim of the producer is to manufacture an object with a certain life expectancy as cheaply as possible.
Plastic bottles for washing up liquids, detergents, shampoos and the like are supposed to last a couple of years, a toy or a utensil maybe 10 or 20 years. The life of these sorts of synthetics bears no relation at all to the wishes of museums as regards storage life and life expectancy.
It has long been thought that synthetic material was also imperishable, in addition to being unbreakable. For a number of years curators, conservators and scientists have been faced with objects showing signs of decay. One of the causes of the late recognition of this degradation is the fact that, in case of ageing, many synthetics show relatively little or no decay for some time, the so-called 'induction-time'. This period is followed by a period of fast ageing.
The reactions leading to the decline and decay of synthetic materials may occur under the influence of internal and/or external factors.
Examples of **internal factors** are the composition of the basic material and the production processes applied.
As a result of the production process, tension is brought into the synthetic material of object 'M.B.' by the vacuum shaping of the sheets. This tension will gradually disappear again in the course of time. This phenomenon has caused the warping of the sheets.
External factors are oxygen (O_2), ozone (O_3), light (especially ultraviolet light) and temperature.

ASA, the material of Broodthaers' sheets, is a synthetic developed in the sixties for outdoor applications. It is used for billboards and signposts which are exposed outside to extreme conditions and are therefore made of a sturdy material. Yet, the sheets of 'M.B.' have oxidized and yellowed under the influence of light, oxygen and temperature.

Uncertain future

If the causes of degradation are known, it may be attempted to remove them or to avoid them in other works of art. However, there are no conservation methods as yet for synthetic materials. Research into the development of these methods has a high priority. For the time being, we can only advise on preventive conservation, in other words: to create the conditions for light, temperature and relative humidity in such a way that the object can be preserved as long as possible.
In view of the degradation of the objects in the Conservation of Modern Art project, the key question has become: how long will the object survive? This question is very difficult to answer. The answers to the questions regarding the composition of the material are in black and white and can be given with the help of infra-red spectrometry. Forecasts for the future are much more uncertain; even with infra-red vision no answer can be given on this.

Concept or fetish, the theoretical decision process in the conservation of modern art

Ysbrand Hummelen, coordinator of Conservation and Restoration Research of the Central Research Laboratory for Objects of Art and Science

At the meetings held so far by the theoretical working group, there has been a constant call for the discussions to be more clearly structured. The discussions during the first meetings could be characterized as 'somewhat chaotic' and those during later meetings as 'structured on an ad hoc basis'. The structure is gradually becoming more apparent, but it will have to be further assessed and refined at future meetings and may even have to be more radically changed. The aim is to achieve a model which will facilitate the decision process in the conservation and restoration of modern art. The model which we have in mind is not an aesthetic model or one based on the theory of art, but rather an open model, one in which the decisions are assigned a place in a step-by-step process. When members of the working group disagree on a certain point, we have to go back to an earlier phase in the model, as obviously something was not properly settled during that particular phase.

I should like to start with a most important statement of fact, in order to describe the atmosphere of the discussions and also in order to clear up what seems to be a current misunderstanding in the museum world concerning the relationship between curators and conservators. It has already been said that the discussions in the theoretical working group are between curators, conservators, scientists, members of the staff of the Foundation for the Conservation of Modern Art and invited experts. Up to now there has been no question of any 'battle' between curators and conservators, no question of a battle in which conservators chose the side of conservation and the curators favoured the functioning of the object. On the contrary. The common aim - to allow the objects to function as well as possible, while at the same time preserving them - engenders a form of cooperation which has opened up relatively new and uncharted territory. None of the participants have experience of this territory, but they are eager to explore it.

Three phases

The following method is now being developed:
When determining the method of conservation for a particular object, the purpose of the first phase of the decision process is to examine the significance of the work in all its aspects. Thus during this phase as much information as possible is gathered about the artist and his work. A specific part of this research is devoted to the artist's methods and use of materials.

During the second phase the information concerning the artist and his work is placed within the context of the time and environment, again with specific research into methods and the use of materials. In the third phase this information is reviewed in relation to the object itself.

From the outcome of these three phases we have to determine both the significance of the object and the significance of the material and the artist's methods. The experience so far is that a decision regarding the method of conservation can be directly related to the significance thus determined. Similarly differences of opinion regarding the method of conservation often bring to light different ideas as to the significance of the object. Moreover, it has been found that particular information concerning the significance of the artist's methods and use of materials is suddenly able to change a person's preconceived ideas. Thus the possibility was raised that Pascali's use of corrugated asbestos sheets in his work 'Campi arati e canali di irrigazione' might be related to the immediate environment of the place where he spent his youth. The landscape of his boyhood memories plays an important role in his work and these corrugated sheets were used there as roofing for barns and sheds. Information of this kind may be highly important in the decision process regarding the conservation of the work. It introduces the possibility that the material of the sheets is not completely subordinate to the form or to the illusion, for example, but that it could also literally be a part of the 'everyday reality' of Pascali's youth. At a later stage this information eliminated the option of replacing the sheets with other sheets of the same shape but made of a different material. In other words: material authenticity gained in significance as a result of this information.

The information gathered in these first phases of the research will have to be further classified in the next period of research, following the same approach. One problem is that in the literature written about the artists, some of which is most extensive, little is to be found about their methods and materials. This is remarkable, as in contemporary art in particular the material forms an obviously significant level. There is an urgent need, therefore, for more information which will aid conservation. Another problem is that present-day artists all have their own 'iconology' of materials and methods. Thus the metal lead, when used by Beuys, Kiefer and Günther Förg, has a different significance for each artist. The art historian and ex-curator Paul Hefting, in an article in Museumjournaal (1996) on '100 years of the Stedelijk Museum', wonders whether an iconology of modern art would be at all possible:
'The basis of Warburg's iconology and that of his successors is to be found in the intrinsic meaning or content, constituting the world of symbolic values. The fact that the iconology of modern art is never talked about and that probably no such thing can even exist is due to the fact there are no longer any collective symbolic values in our century (in the sense used by Panofsky).

Such values - certainly in recent visual art - are determined by individual artists for themselves. These values are related to other phenomena in the real world, but they have no general significance and may change at any time.'

If we assume that some of these values are also expressed in the choice of material, how should we classify this information based on the material? I should like to propose a number of possible classifications which were put forward during the meetings of the working group and which may be of value in conservation:

- The material is used or partly used because of its iconological significance (e.g. social, ideological, historical, religious significance). The fact that Tony Cragg collected the parts of his work 'One space, four places' when searching along river banks, endows these objects with a special significance. Many other examples of this type could be mentioned, such as the different significance of beeswax in works by Wolfgang Laib, Mario Merz and Joseph Beuys.

- The material is used in order to create an illusion and is subordinate to this illusion. As described above, the corrugated asbestos sheets used by Pascali in his work 'Campi arati e canali di irrigazione' were initially seen in this light. The corrugated shape was thought to be the only reason why Pascali decided to use these sheets. According to this viewpoint, the fact that the sheets are made from asbestos is not important. They could therefore be replaced by sheets made from a different material.

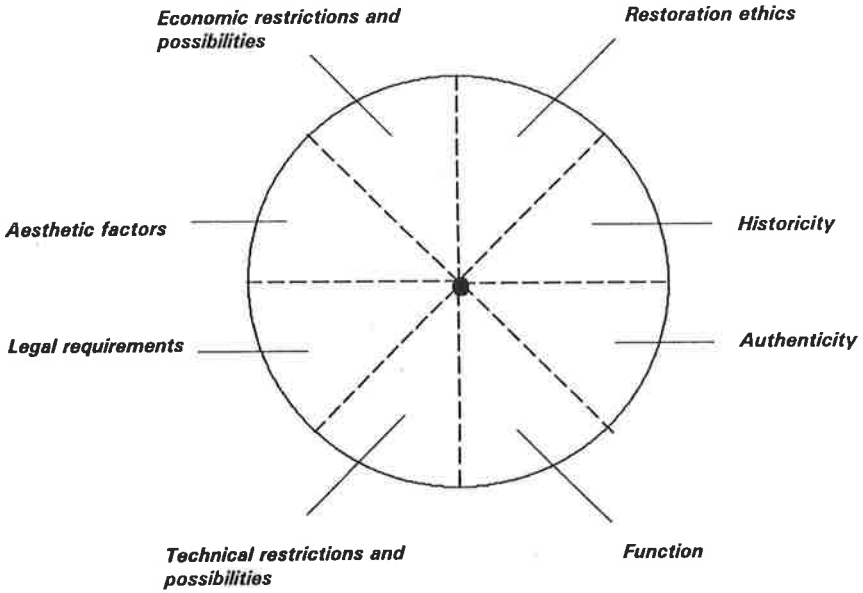
- The material is used for its optical qualities such as colour, texture, shiny/matt appearance, opaque/transparent qualities, surface texture such as pasty, smooth, layered, rough, etched, patinated, corroded.

During the discussions on the most appropriate way of conserving 'Gismo' by Jean Tinguely, views on the optical qualities of the 'Gismo' played a role. Many parts of 'Gismo' originally had much stronger colours. Should we aim to recreate this colour as far as possible, allowing the optical aspect to prevail over the 'original' patina of junk material? There are, of course, few works which fall completely within one of these categories. Often ideas relating to the material will be based on more than one of the categories mentioned. Nonetheless, setting priorities within categories can facilitate and clarify the decision process. As can be seen from the above, information from the artist concerning the significance of the material may be the major factor in decisions regarding the method of conservation. For this reason, whenever possible, the information is gathered during the first phase by talking to the artists. This factual information could be called the 'hard' information and is assigned a place as such in our model. Gathering this hard information is important for future conservation and may therefore be seen as a part of conservation.

Placing this information within the context of time and within the work by the artist (the second phase) has its own special place in the model. It happens at a later stage, sometimes years later, and is the task of third parties. This is therefore a matter of subjective information. The suggested possibility regarding the origin and significance of Pascali's corrugated sheets does not come from Pascali himself but is an interpretation of the method which he used at the time.

In the next phase (the third phase) the object is examined and an appraisal is made of the condition of the object as a result of ageing. It is considered in relation to the significance of the work as determined from the information acquired. In other words: when examining the object the information is considered in terms of what we see and what we should like to see.

The possibilities for conservation, along with the impossibilities, can then be assessed with the aid of a model developed by Ernst van de Wetering.



The model, when complete, will contain all the different factors governing the choice of a particular method of conservation. A number of factors may prove to be mutually exclusive. This will have irrevocable consequences and requires a well-considered decision. Thus the replacement of parts of 'Gismo' by Tinguely is a decision in favour of the function (allowing the parts to 'turn' producing the original rhythmic sound) at the expense of the authenticity and historicity. When an object is created it is in the middle of a circle.

As ageing takes place the circle will become larger and decisions regarding functioning and conservation will have to be made.
When testing out these models it was found that a number of unexpected things happened. One of these was the result of what we have called 'involvement'. It has been found up till now that the nature of the involvement with the artist, or the group to which he belongs, strongly determines the choice of method for conservation.

Direct contact and cooperation with the artist creates a deep involvement with the original function of the work and the ideology of the artist. Those who have direct contact with the artists or had this contact in the past, such as the guests who have been specially invited to the discussions because of this very contact - the artist's curators and assistants - were generally found readier to take more radical measures. They wished to act in the spirit (ideology) of the artist in order to preserve the original concept or function. Participants at a distance of one or two generations from the artists had a tendency to call for more restrained measures, in order to preserve authenticity and historicity.
During an investigation of possibilities for conservation of the work '59-18'(1959) by Henk Peeters, the two extreme positions were highlighted by Peeters himself on the one hand, who is offering now - 37 years later - to recreate the work in the spirit of 'Zero', and on the other hand by the words of one of the members of the working group: 'I was born in 1964 and for me all Zero art is romantic.' For one person the objects still represent a living tradition, concept or ideology, while for the other the same objects are historical documents, silent witnesses of heroic times - which does not in fact mean that this has caused them to lose their force.
Thus the question of 'concept or fetish' is not a controversial one but rather a question which needs to be investigated. The use of models may perhaps be able to add an extra dimension to the investigation and at least help to clarify the decision process relating to the conservation of contemporary art.

"A balloon of meaning around the object"
Tony Cragg about his work

Tony Cragg, artist

It was 1969 when I first went into an art school in the west of England, in Cheltenham, and it was an ordinary art school. We used to make drawings and paintings; I made my first sculpture without thinking very much about it and hardly noticed I did it. After that I went to another art school in Wimbledon.

Between the two schools I worked in a foundry in the area near Bristol. This was a very interesting job. We started at half past seven in the evening and we worked through the night.
It was an enormous hall and there were enormous great ovens where the iron was being melted. There were people making moulds from sand, packing the sand into shapes and putting it into sealed boxes. They were moved on a big conveyor belt in front of them: there were big pots of molten steel being poured into these forms. The forms had to cool down very slowly so they went on this very long journey through this maybe 300 metre long hall.
The bit where they had been poured in, the flash, was bright red and bubbling hot and as they got further away it became dull red, then less red still, then grey and after a few hours or so they arrived at a big shaker which shook the whole thing up and it disappeared into a big hole. There was a conveyor belt which at one end put out enormous amounts of dull red glowing machine parts. These were still extremely heavy because they still had the sand inside of them.

The other end of the conveyor belt took the moulding sand out of the pit and took it up, rattling and shaking, and made this enormous 5 or 6 metre high cauldron of sand. I got into the shower every morning with these great big West-Indian guys. I was the smallest, thinnest, whitest person in the area.
It was always an event.

So I finished working in the foundry and started at this new art school in Wimbledon. This was in the painting department which was a small room. Everybody was standing behind their easel and had a project to do and for whatever reason it was impossible for me to just stand there and convey my energies. There was a little bit of a problem about what was I actually going to do there. Thankfully I could escape the problem for a while because I was just moving from London, but eventually I had to confront the problem.
So as the very first thing - I do not even know now why I did it - I brought an enormous amount of string and I just sat on a chair with the untied string tying knots in the string. You get quite good at it after a week or two.

I put the tied string to one side, and on this side slowly there was a growing mound of string. The people were very good to me; I think they thought I should not be there, and I could not tell them why I was doing it because I did not know. It was the first time I was aware of actually making anything, seriously working with something, without any thought in my mind.

One of the things I've learnt about making something, sculpture maybe, is that it requires an act of faith. You do it without knowing what the result will be, where you are going to go to or what you will end up with. So you do not have any practical contraints on you. But it was also a lesson for me, by chance, of a kind of relationship, between the material one uses, the kind of meaning these materials can have and the kind of bodily attitude to the material; what kind of physical relationship can one have with the material.

After a year in this art school we had an exhibition. I made some work out of doors: ordinary art, sort of antics. Somebody came to discuss this exhibition, and for the four photographic works that we had, he said: "I call this arte povera". This may sound strange now because the information lag was a lot longer then than it is now. Today most students seem to find out what has happened before it has happened in fact. Finding out about art a year or two later was quite normal in those days. So for the first time I thought it was time to get an education and I went to the library to look at what arte povera was, but also at many other things. And suddenly there was a whole world of things to discover: minimal art, conceptual art, land art: many things bugging me all at the same time.
As a student in my mid twenties there were times when I could not think further than a sculpture lying on the floor. As it was resting there, everything seemed perfectly right. At the same time I got to know Richard Long. A lot of the attitudes in his work were very influential to me as well.

For a year I was completely in love with my new discoveries. Then finally I realised that these were people who had already started to exhibit and these were already artists functioning in a big world context. I decided I did not want to be the last minimalist or land artist and I got the rest of my education up to the mid seventies. I was reworking through my work and still trying to find solutions for my sculptures, also trying to find out where I was but away from the things that I had admired and loved so much. The economy of being a student does not allow you to cast big bronze sculptures. Even if it had been a possibility, a physical possibility and an economical one, it was never one that actually occurred to me.

I had a bicycle, a tandem, where I went everywhere on my own on and I put a box on the back where somebody else should be sitting. On my way from the outskirts of London where I was living, to the Royal College I used to collect some material that interested me. These were things that were used everyday

and I used to take these things back to my studio and see what I could do with them. At that point, three or four years after making a pile of string, I still did not have a sense of where I was going to go. I just kept making things, mainly very silly things probably, but it was a very valuable time for me and I learned a lot.

I think what is praiseworthy of the art of this century is the nomination of the manmade object as being an important group of objects which one can use in art making, and as being carriers of important information. This seems to start with Marcel Duchamp. That is not entirely true, there were lots of things happening at the beginning of this century. The realisation that there were just as many things to find on the rubbish tip as there were in nature. I had an ideal: a very major process in this century of artists to nominate, to find new materials to make art with. Not just that, it was the problem of taking things from outside the art world and bringing them into the art world.

In the last century there were only generic materials, in total about ten different materials for making sculpture. At the end of this century we know sculpture is made from everything; the turnover is from gold to shit. And with every new material you have to have a physical way of dealing with it, so you also have to have a technique of dealing with it. We've had artists who have blown up and warped and spat. They've developed the way humans use their body to produce something, which had to fit with the materials they selected. They challenged some new technologies but even things that existed in the last century suddenly became expanded in their use.

It is basically still a nomination process. But the only problem with a nominative process in a finite world is that it is in fact a finite world so there is a point at which there is no point in naming another new material, and that is very much where we are at this point. There is no point in artists running through the world trying to think of a new material to use now. I was fortunate that I came to use some material in the late seventies with a profound use - plastic - and this was one material that was still quite a new material to be used at that time. Even in my own work there was some work which just exploited the innovative and maybe even challenging quality of the material. After a certain point in time I found it was not really what I wanted to do - I had to find some other ways of expressing more complicated ideas than just relying on the new material.

So now we have all these materials and possibilities and one asks: "what for?" One thing that is very important to these materials - the way in which they are used and can be used is because they have a physical existence - but they also have another kind of existence which depends on the way we think about them. This other existence is always a very embarrassing thing; it is the metaphysical quality of any given object.

So over and above its physical condition there is also something that we bring to the material which I describe as a balloon of meaning around the object. In natural material and natural phenomena there tend to be enormous balloons of information around these objects. Something like a mountain, fire, water, the sea, the river: natural objects that we have evolved with from other states. We have an incredible biological, environmental thinking, feeling about these things. When you say any of these words we have an enormous balloon of poetic, historical, experiential information about these particular objects.

Things that we have made ourselves tend not to have the same volume of information around them. They tend not to be as essential, basic. They tend to be very much more on the edge of our existence. One of the reasons is that they have not been existant for millions of years, they may not stay around for very long, and also we produce so many of them. Already last week in Holland there were millions of these new products produced and put out in shops. What kind of relationship are we going to have with them? One very important job for artists is to take these objects and tend a little bit to the balloon around them: maybe take something beautiful, sweet, erotic and slowly fill up the balloon around the physical object with a little bit of information. Why should one do that?

Personally, when I think, when I dream, when I have fantasies I tend to use the richness of this available language of things just to think with. I think when a word is very short and when it is not accompanied with very much growth around it, it does not have so much meaning, it does not have so much strength. But a word or a term can be built up to be very powerful and a very strong metaphor.

It was incredible to work with used or found materials, although from my point of view there are not many things that are not used or found. Take for example a used piece of wood: it is usually cut down by something. The materials and sources are only limited in a way that one would limit oneself to using them. But I believe that at a particular point in time, after all the materials have been made possible, that we have a new perspective for making sculpture with. This reflects the extensive boundaries in an unimaginable way, well beyond the fictional borders of sculpture making.

Although we've obviously had thousands of years of being able to make sculpture, I believe that in the nineteenth century there was hardly any sculpture. Sculpture, the way that I would like to think of it, really only started with Mandella Russel. The difference being that nineteenth century sculpture was always something you see from 100 metres away and it is always a power symbol for the church or a business or the monarchy or something. There is none of the things that I think you need for looking at something.

Mandella Russel is the first artist in the world who makes you use your eyes in a thirty to fifty centimetre range. What I think he is demanding is the same level of engagement with an inanimate object that we actually have when we look at each other. When we are looking at his objects, at each other's faces we rarely make a mistake about who we are talking to. But you can also gauge the physical, mental state, age, sex whatever of the person you are talking to. This is a fantastic tool and Mandella Russel is the first person that puts it into use.

Sculpture is a very rare activity. It is not an activity that is encouraged at home. Mum does not like it if you do it in the living room, it is not an activity that is encouraged in kindergarten, you do not do it at school. Many sculptors came to the activity very much later in life. Also the amount of sculpture made in the world is minute. Last weekend, maybe a couple of million tons of something was turned into some product and I am not sure how many kilos of material was used to make sculpture last week but it must be a very small percentage; it is a very rare human activity.

Sculptors have a little bit of competition with the painters. That is so easy, but I do believe sculpture is in a very different phase of its development. Painting is very, very fast. A normal child of six or seven has already made many paintings. Sculpture needs time and it needs energy and space. Actually it is a very elemental and a very essential activity and it is obviously a very fundamental and basic human need to do that.

Now I have this big instrument to play and the question is what can you play, if all these inventions seem to have been done. One has to start to look at maybe new form. The new form will come anyway - new form is developed by new spirit and new content. One of the things that I have found very important in my own work, and some of the things that came out of my discovery work in the middle of the seventies, was to put nature to a kind of important relation and convention for us all; between nature and non-nature or artificial, between the natural world and the non-natural world.

It is very difficult to find out where nature is today, without delving into moral aspects of the environment. It is incredibly difficult to find anything that is natural. In Europe we have been selecting plants for 60 thousand years, we have chased away the animals, we control the way the water runs, the land is divided in a way that it was not divided naturally. We change what is in the air, we change what is in the water, we change what is above us; 150 km above us. So we have changed a lot of things already. We call it pollution, but that is a negative word. It is not always helpful to think about moral environmental problems - it is the way we are effecting changes. We are effecting changes of the environment and one becomes more aware of it in every sense that one ought to be taking more responsibility for it.

Sculptors take incredible amounts of responsibility for what they are doing. It is a very strange activity for a grown, intelligent, half-intelligent person to be spending his or her time over many days and weeks with a lump of inanimate material. This is the ultimate in responsibility and caring and whatever capabilities, fantasies and physical and technical capabilities a person has. He will employ it in his moulded feeling with his material. I think it is exemplary and a very rare activity; maybe one finds it in the bastions of science and research.

Another great advantage that sculpture has, and I hope it stays like that, is that it is utilitarian - it is not useful. This is one of the conflicts of the last fifty years. As soon as you started to use so many man-made objects in our culture as a reflective source, you suddenly realised that it fascinated people at the same time. There was a mixing up, a synthesis over time, mixing up design with concerns about art. Design and art are really a totally different thing. Design and art have absolutely nothing to do with each other. One of the biggest mistakes and aberrations in our culture is that they keep crossing over each other. The reason for that is very simple in my point of view: art is absolutely not useful, it is absolutely useless, and that is important. Everything else is designed and made for another function, operates in a consumer system and it all gets channelled in a power system. In that way it recircles in the same power system. It is not capable of being outside that system and reflecting upon itself. That is the function of art; art does that I think as a kind of byproduct. It is very important that artists for all their craziness and all their neurotic habits or whatever they have, they just do something for themselves.

Another problem with a utiliarian designed work is that it is so depressingly inferior. If we walk into the supermarket we are greeted by ten thousand objects with some horrible colour, all screaming 'buy me, buy me'. Every decision is made with the lowest common denominator: forms, colours, shapes, everything else, images used are usually very loud. It applies not just to the objects, it applies to the architecture of buildings, the clothes we all have to wear; unfortunately it applies to the education we have. In some far world, the Greek world, knowledge was something that was just a virtue. One did not necessarily have to have it: one assumed it was something of value. And of course now our education system is limited entirely to that which somebody has already decided, will be useful for you to learn. It is rather perverse. Art schools tend to avoid that problem.

It is not just the object world that is being reduced to the lowest common denominator, it is also language. It is very difficult in the English language to find new literature, to find new poetry and, maybe, to reflect on the fact that the Greek word poetry was in essence not a word confined uniquely, exclusively to literature. It is a word that simply meant creation. It is a description of the new way, the immediate sense, one's reaction. One had an original impulse to a situation, one would make a certain sound, noise, find a certain syntax to

describe one's reaction to this thing; so it is a creative moment. Reading papers, books in whatever language, it is actually very difficult to find shadows of poetry relating to the eighteenth, nineteenth, twentieth centuries; to find a combination of words that actually leads into a new feeling, thinking territory.

There is another enemy which is called the scientific mode of thought and it is a very strong way of thinking that we have developed over the last 250 years. It is already something which philosophers like Bertrand Russell were very concerned about in the middle of this century. Particularly because this mode of thought is a very efficient, very strong, very logical way of thinking. But it is a mono-culture and it is very exclusive to the vague possibility of different ways of thinking about things. It seems that things outside of this scientific mode of thought are very alternative and a little bit whacky. We are all caught up in this mode - it is very difficult to get out of it, to take another look at it. You can sometimes see it when we observe other cultures and we say: "are not they strange, they believe that". There is another thing about material in the society that we live in. Materialism is an ugly word, we are materialists. Always derogatory remarks have been made about it. We have forgotten that 'material' comes from 'matter', from 'mother'. And the whole relation to mother earth and respect and love that we bring to our mother is encasing that term. The material being is in fact a very beautiful and meaningful engagement and relationship to us. As far as matter goes, we have not seen matter debated very much.

The Big Bang

The Big Bang was very symmetric and energetic - perhaps not a good place for us to be. There were no molecules and atoms or any particles in the first few seconds of this Bang. But there were eighteen dimensions. Material evolved out of this very energetic state. Collision of matter and anti-matter has left us with what is around us and ourselves. It took a very long time for the first collision to take place, and to bunch up into the first protons, neutrons and atoms. It took more time to actually form any molecules together. This is evolution - it seems very simple but in fact we do not understand anything of it. That is the incredibility of science. We have made important finds like gravity, electro-magnetism, strong force or weak force. We can describe them but we have no way of knowing what they are.

Finally material develops into dust apparently and goes to nuclear things and then we get lumps flying around which look like meteorites, planets and suns. Everybody knows the schoolboy or schoolgirl story of how the universe came into being, but it is a development, it is a real evolution that is going on. One of the most fantastic chapters in this development I think is that of Organic Chemistry Before Life.

It started with an organism, a very big chunky molecule lying in a pool and every now and then, for whatever reason, it would become another kind of molecule. And they would get bigger and more ornate and finally they would get to being an amino acid, whatever that is. They would keep going until finally it gets to the point where one would reproduce itself. It just seems so unlikely to me.
So we have this material development going on. That is, incredibly enough, the development of bacteria right through to you and me. But not only did it develop and reproduce itself, at some point it also started to think about itself. This is where we are at this point.

Finally we find ourselves in an enormous, cold, dumb universe, we being the only things that are intelligent. Until something speaks to me or appears in front of me, I have to believe that we are the only thinking material.
The neurons that allow us to think relatively well, have developed over many, many smaller organisms. In all sorts of ways, they are just as thinking as we are.

This thinking material can reflect upon itself and can reflect meaning into this dumb universe. Material is everywhere without you and me being there, but as soon as we are there it becomes reflective, it becomes very different. So there is development in material, even at this stage.

The dumbest, most uninteresting piece of material is some object somewhere that I have never seen - that does not interest me at all. Things become slightly more intelligent when a scientist says, "I think there is something out there, I think that may be a kind of something". This postulating makes it a little bit more real because we can actually perceive something, even if it is with an ultraviolet or infrared microscope. Then when you can actually see the light of it, you can smell it, it becomes very close - we now have a balloon of information. It gets bigger and bigger as it gets nearer, until we can touch it and can do things with it. That is the development of intelligence of material.

Something does not have to be outer space, it can be a lump of clay one metre under the ground; it is equally dumb. But once we get it out and let somebody spend time on it, moving it and forming it, and then suddenly it will evoke meanings and emotions in other people. Suddenly this piece of dumb clay begins to act like an intelligent object or to have intelligence.

There are too many subjects for me - the landscape, the figure. The landscape can be anything to me - the bottom of the sea, or the moonscape. The figure I like to see in the most generalistic way, not just reflecting on ourselves. Although we have such a highly developed sense of responses to the human figure, there is nothing one can look at on the human being - a little bit of leg, a little bit of arm - that one has not got a whole set of emotional responses to.

We have a great depth of psychological responses to it. The figure I would like to see is enormous. From me there is a long tail all the way back to the smallest and meagre and beyond. We human beings are lonely enough as it is, we are in awful danger of isolating ourselves.

And then we have a third group of objects and these are all the things that we produce and secrete, that mediate between the figure and the landscape. This building, this platform, my shoes, my socks, all the products that we secrete outside ourselves, is a third group, a subject we use in art. The sources in art, the landscape, the figure and everything that helps the figure keep my naked backside from the naked soil.

I have a very slow and plodding way of doing things. I always think I have no idea about making sculptures. At first all the things I left on the ground. It took me an enormous effort to actually do anything else with them. Something fell over, broke and just lay there and I forgot. That is the way you wanted to be, so there was some rightness about it. The materials themselves had a kind of rightness about the way they behaved in space. I had rules for myself never to bang or blow anything, just to keep it all open. The sculptures would just stand around on the floor, and you would go further and further on the floor. They had something that was very important to me, they had something 'particular', in the sense that a lot of material, matter (and ourselves) at some level or other are made up of particles. When I cleaned up my studio I put them all together in a big sack. One of the sculptures I made in 1975 was actually called 'sack'. I soon realized that the next step from a particle world is in fact a layer system.

The sort of work that has occupied me since the middle of the eighties, are works where the substances develop a body - things like bottles, containers you just wrap around surfaces. They become metaphors for bodies of some kind. In one of the first studies of organic chemistry before life, one of the most important things is what kind of interplay started things going. Something separated from the rest of an aggressive environment.

Materials have aesthetic qualities. That is one of the most complicated areas to talk about. The first thing I have to say is that it is very relative. What we like and do not like can be different at two times. Sitting on a cliff once, in a storm, watching enormous ten metre high waves crashing down on rocks, that was so amazingly beautiful. The waves smashing down on the basalt rocks of the Irish coast and the spray maybe thirty or forty metres up in the air, that was just one of the most beautiful things in the world to see. This does not look so beautiful if you are sitting on the rock, and, ten feet away. You see the relativeness. The distance offers a certain perspective on the material and the event.

It is the same thing with mountains: mountains are particularly beautiful if you are a long way away from them, sitting in the pub looking at them. But they are also beautiful if you walk on them, with a rucksack full of things to eat and you have got big, strong boots and you are feeling well and healthy, when it is about half past ten in the morning and the sun is shining. But when you fall and hurt your leg and there is nothing left to eat and nothing left to drink and it starts to get cold, then the landscape gets very, very ugly and it is not a beautiful place to be. And you think: 'Why did I come here, it is so ugly'. This shows the relativity of man's aesthetic appreciation of landscapes.

There is also of course an enormous range of things involved in the aesthetic appreciation of the figure. There is a certain conditioning - just as our body dictates us through a certain kind of biological conditioning what things we like. This also applies to looking at paintings and sculptures. It does not seem likely but I assure you it is so. This is an interesting subject, the personal assumption: 'I know what I like' is a ridiculous statement, because nobody knows what he or she likes. That is the whole development of our culture, of our society. It depends on *not* knowing what we like, finding out what is not good for us and what is going on. Somehow on the basis of some kind of a second appreciation of certain groups of things we make tests.

There is also a lot of unconscious visual appreciation going on. They did some experiments some years ago in America with people observing a green figure of about thirty metres. They were asked what they thought they were looking at. It turned out that the first couple of thousandths of seconds the eyes are doing very active things to check out what this object is you are looking at. Human beings have fantastic facilities for recognizing a figure in any landscape. The process of looking at something is really incredible. Whatever we may think we are looking at, we are not. The first thing you are looking at when you see somebody is his knees. Unconsciously and very fast: during thousandths of a second the first piece of information you want is what is happening to their knees. The reason for that is we want to know how many knees they have got: is this a person or an animal, how big is it, how fast and from what direction is it coming? We are not aware of it, but it is so. We are not as clever as we think. There is a lot of preconditioning in all sorts of responses.

I am not a conceptual artist. That I found out. A good idea in sculpture-making, in art-making may be a luxury. There are a lot of very good ideas that make terrible artworks. There are also many artworks with very stupid and banal ideas. This is also something that one always has to take into consideration. I have actually learned, even in a more complicated way, that the basic physical process of making sculptures is a real learning process. I believe in a process where I move and the material moves, and I can look and I can think and I move again, and the material moves again, and this goes on and on ...

It may be a slow process to start but after a while the material accumulates so many times 'I look-I thought-I move' that suddenly the material has a degree of autonomy. The material, the object one is making starts to talk back to me and I think this is one of the most fantastic and incredible things. This basic, classic process of moving: I move-it moves, the whole process of developing things - you see it in every painting from Van Gogh to the whole collection here. It is all the same process of artists moving, material moving and of reflecting. A few thousand, if not a few hundred thousand, decisions are going into the making of any one sculpture. I think this is a real art - not just for expressing oneself, it is a real source of knowledge. That is what I think sculpture is good for. It is a way of making the material more intelligent, it is also a way of making ourselves more intelligent. What it is in fact, is that we extend ourselves. We get out of our bodies and we actually slowly start to move, to extend ourselves, as we do in our culture anyway: everything, the building, the chair, the lights one can see as a kind of secretion, as we also secrete and produce millions of things in our body every second. All this is of intrinsic essential importance to our survival.

I believe that making sculptures as a kind of material extension of ourselves is much more trustworthy than the kind of extension that goes into making any utilitarian design situation. I have recently tried to surf on the Internet, which is an amazingly frustrating experience. I suddenly realized that whatever the dreams, fantasies and hopes that can come out of the freedoms one can engender by surfing the Internet is actually to be found in concentrating on our culture.

Stichting Behoud Moderne Kunst/
Foundation for the Conservation of Modern Art
1996

Gabriël Metsustraat 8
1071 EA Amsterdam
The Netherlands

telephone +31(0)20 673 51 62
fax +31(0)20 675 16 61