Modulo Bianco a tripla struttura by Vanna Nicolotti: recomposition of the structural unit and aesthetic of a work created with the "cutting technique" on canvas

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Abstract

Modulo bianco a tripla struttura was made in 1970 by Vanna Nicolotti. The artist, close to the milanese Spatialism of Lucio Fontana, used the technique of cutting canvas in constant search for tridimensionality and geometric perfection through overlapping cut canvases. This technique caused conservation issues and the work wasn't exposable anymore due its fragility and deterioration. Vanna Nicolotti therefore recommended the substitution of the front canvas or alternatively, as recommended by the conservator-restorer, it was decided to recompose the structural unit taking account of the artist's poetics. The lacerated parts were reconnected after Agar-Agar gel moistening and by trecker method.

Keywords

Canvas, Monochrome, Conservation, Restoration, Trecker method, Tear mending, Agar-Agar.

Introduction

The object of our study, *Modulo bianco a tripla struttura* is a monochrome work made in 1970 by Vanna Nicolotti, consisting of three overlapping canvases painted with acrylic paint and cut into strips forming a design. The work presented superficial conservative problems and structural damage.

Overlapping cuts gave the illusion, thanks to the mirroring bottom, of a multilayered depth and give the artwork its tridimensionality. Any imperfection on the surface would counteract this effect, for this reason we decided to impart structural stability effectively, but not visibly.

The experimented method included progressive tension with the use of treckers and moisture supply using Agar-Agar rigid gel, in order to facilitate the loosening of the strips towards the achievement of a structural link.

Information about Vanna Nicolotti and her works

The Artist Vanna Nicolotti (born at Novara in 1929, lived and worked in Milan) started her artistic career at the end of the 50's. Her aesthetic research focuses on the artwork's spatial dimension, which is then conveyed through *Spatialism* into a personal interpretation. Nicolotti's cuts on canvas are painted monochromatically and create symmetrical and regular lines. The artist cuts the canvases, as also taking parts out of them, alternating between empty and full spaces. Her research does not concern only bidimensionality and this is why many

of her works are built of superimposed canvases which have the same cuts and reflect on a mirroring panel on the bottom layer (Azzoni, 2015a, p. 50).

Modulo bianco a tripla struttura, which measures 100 x 100 x 6 cm, is composed by three overlapping linen canvases, painted with white acrylic color and cut into strips forming an ovoid design (Figure 1); the same design is reproduced on each canvas with smaller and smaller dimensions, giving depth to the whole set.

The Artist created the strips by cutting the canvases and rounding the edges with artist's fingers in order to let regular spaces between the strips. The wood and aluminium panel forms the background of the superimposed canvases and it reflects the full and empty spaces like a mirror. The three canvases and the panel are attached together with nails.

On the outer canvas, the pattern formed by the cuts is 71,5 cm long and 36 cm height in the central part and it is positioned in the upper part of the picture, occupying over a quarter of the total surface.

The three canvases are fixed together with nails and to create a single body the outer perimeter has been finished with a fabric ribbon.

Vanna Nicolotti reported the technical procedure of *Modulo bianco a tripla struttura* and of all the works made in those years during a meeting that took place in her studio in Milan on 14 october 2015.

For the preparation of her paintings, the artist turned to the *Colorificio Nord* in Milan (Lucio Fontana and other artists used to buy here white canvases with industrial ground), where they applied a layer of glue on the back of the canvases to ensure a stiffness to favor a clean cut.

On the back of the support, the artist made the geometric drawing with pencil, then made the cuts with a cutter and glued support strips with *Vinavil*®[1] adhesive to make the canvas more rigid and resistant to cuts in the central part. Subsequently, in order not to visually break the harmony of the reflection on the metal plate, she spread a layer of white paint on the part affected by the cuts. Also, on the front and in addition to the white preparation, the artist applied several layers of acrylic water-based paint, and before it dried, she molded the strips with her hands to take on a rounded shape.

State of conservation and causes of degradation of the work

Modulo bianco a tripla struttura is kept inside the Remo Brindisi House Museum (close to Ferrara, Italy). This building is situated near the sea and was built as a private house, therefore without usual museums' requirements. The place and the location of the work caused dust, pollution and saltiness deposits which weakened the textile structure and oxidized the metallic sheet. The work was exposed publicly until Brindisi's death in 1996. An

[1] *Commercial name of polyvinyl acetate based adhesive, water dispersible, with pH 4-5. Patented in 1952 in Italy by Rhodiatoce S.p.A.*

historical photograph showed the damages (Piraccini, 2005, p. 25), so it was later moved to the storage where it remained until its arrival to the Academy.

The work arrived at the laboratory of the Academy of Fine Arts in Bologna presenting superficial and structural conservation problems.

On the monochrome surface, there were very evident deposits of atmospheric particulates, a resinous dripping, residues of adhesive from adhesive tape and numerous fingerprints (Figure 2), as well as signs of accidental contact, explicit signs of poor care.

The observed superficial and structural damage could be traced to different causes starting from the natural (aging of the constituent materials), human (incorrect handling, accidents) and environmental ones.

Regarding the latter, the work presented an extreme sensitivity to micro-environmental variations that accentuated the natural movement of the canvases, bringing as an extreme consequence, the tearing of the strips (Figures 3-4-5-6). The humidity and the temperature act differently on the warp and the weft of the fabric, modifying it in a non-uniform way: the microclimatic variations are very dangerous because the object tends continuously to put itself in equilibrium with the surrounding environment, so the fibers are subject to continuous stress and become increasingly fragile.

The importance of a correct conservation environment was tackled by the *MU.SA* (Museum Sector Alliance) project, which consists of a remote monitorization of the environmental conditions inside museums, promoted in Italy by the Cultural Heritage Institute of the Emilia Romagna Region with the National Research Center-Institute of Atmospheric and Climate Sciences (ISAC) of Bologna.

The *"Casa Museo"* was included in the system, which provided for the remote control of the museum microclimate in connection with the *CNR* (*National Research Center)* of Bologna. The survey began in 2009 with the supply of sensors that detected changes in temperature and relative humidity inside the museum for only three months (July, August, September), a time that was far too limited to make complete evaluations, but enough to confirm the non-optimal environmental condition. In the storage, where the *Module* was stored after Brindisi's death, relative humidity values, were recorded close to 70% for the entirely considered period. Temperatures have reached values above 24°C up to peaks of 32°C.

However, data are lacking to assess the temperature and relative humidity changes to which the work was submitted before being moved to the storage. Surely, these values have accelerated a progressive deterioration that has altered the physical characteristics and consequently the aesthetic ones.

However, the first damage derived from the artistic act, when the artist has created a clean cut between weft and warp yarns, distributing the tension in an uneven way, and subjecting the strips to an excessive load; also by using a cutter, she involuntarily got out

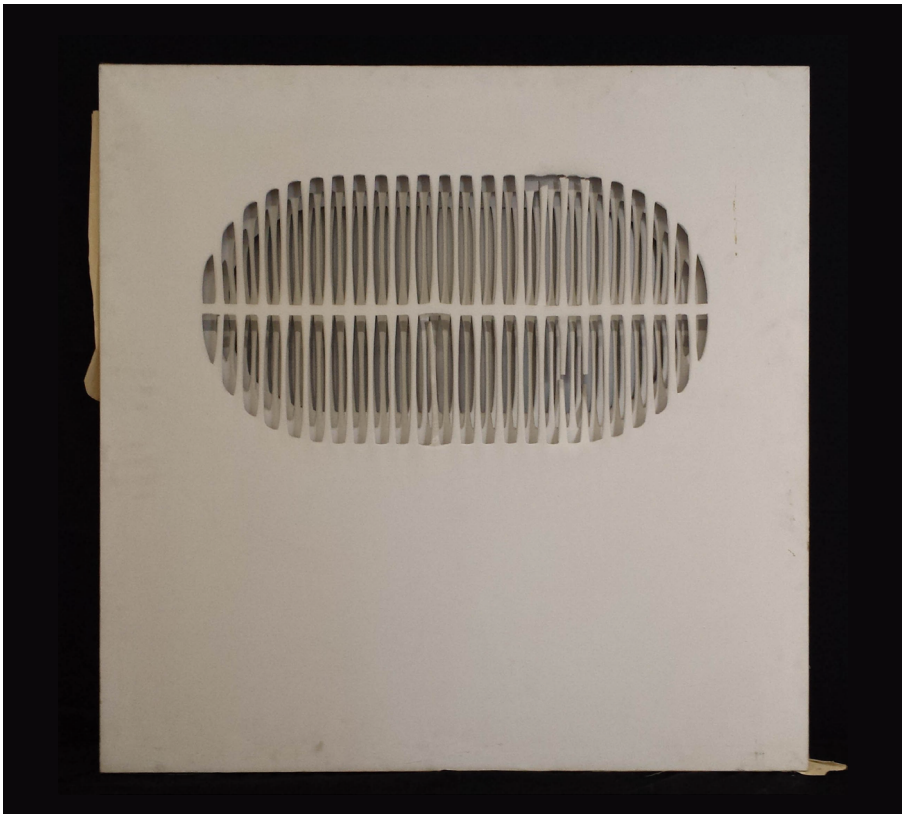

Fig. 1 – Front of the work before restoration.

Fig. 2 – Fingerprints on the perimeter of the work

of the design geometry only by few millimeters procured small cuts which were then the trigger of further tears.

The cut warp and weft yarns compromised the tension of the support, because the weft is spun and woven with greater speed and strength and therefore is less flexible, while the warp is more flexible and reactive to humidity. Thus, a canvas that has undergone a structural interruption reacts differently to thermohygrometric fluctuactions.

In addition, the choice to apply a vinyl adhesive (with an acid pH) on the back to give greater rigidity to the fabric has proved to be responsible for the stiffening and weakening of the support.

Even during handling, the basic precautions were not respected; in fact, the deposits of greasy dirt visible along the perimeter supposedly mean that the work was handled without the use of gloves, and the clean cut on two strips can be brought back to an imprecise opening of a package.

Before intervening on the artifact, studies were carried out and an intervention project was drawn up, which involved researching the textile support to establish a correct structural treatment methodology, and restore the aesthetic aspect.

Restoration interventions

Surface cleaning

Our intervention was, from the beginning, conditioned by the impossibility of dismantling the work, as the owner did not intend to go against the will of the artist, who had initially expressed an unfavorable position towards any intervention besides her own; therefore, intervention was initially limited to a surface cleaning operation.

Before starting, we produced a mock-up sample similar to the original regarding materials and technical execution, subjecting it in the laboratory to the same stresses suffered by the work in its environment. All the tests were performed on the sample, to be able to safely evaluate the best methodology to follow. The materials tested on the sample were essential to decide the most appropriate intervention methodology. The cleaning tests assessed different types of materials, some of which are already commonly used for cleaning monochrome surfaces, and other materials belonging to "dry cleaning" techniques.

Based on the tests performed on the samples makeup sponges and cloths have been used, either moist or dry, according to a study by CESMAR7 about a technique named "*dry cleaning"* (Daudin-Schotte, van Keulen, & van den Berg, 2016). The combined or alternated use of these materials allowed a progressive cleaning, respectful of the surface and its aesthetic and most importantly, approved by the artist.

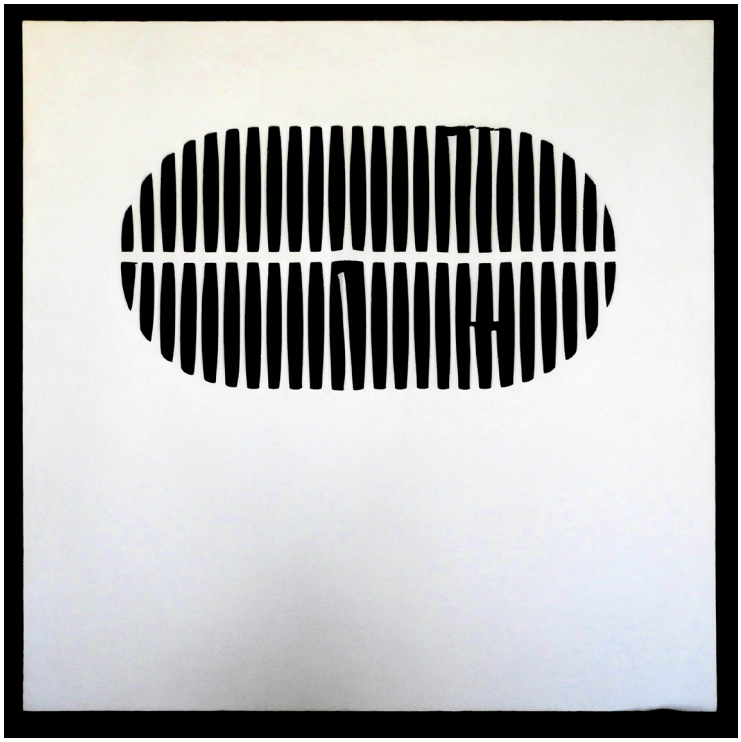

Fig. 3 – Front of the external module - One strip completely detached and two attached only by a thread in the upper part to the right - withdrawal 4-5mm, listel completely detached in the lower central part - withdrawal 1cm, slats cut in half in the lower part to the right - withdrawal 1-2mm, listello being detached from the lower left part - 2mm shrinkage.

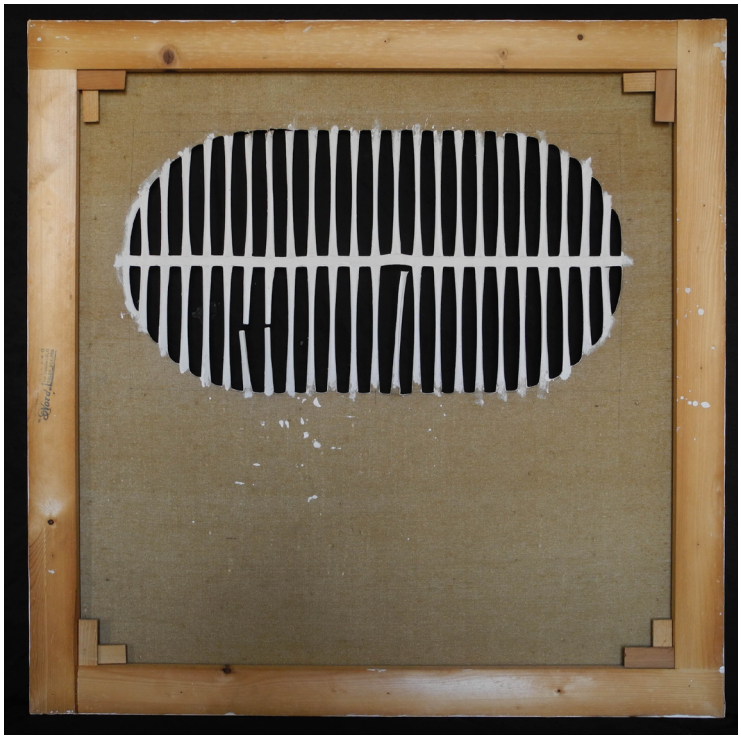

Fig. 4 – Back of the external module.

Stretching of the strips

During a subsequent meeting with the artist, we agreed on the possibility of carrying out experiments, as her intervention proposal was to recreate the damaged module from scratch with the consequent loss of the original.

When it was finally possible to proceed to the visual examination of the back, the drawings that the artist drew for the construction of the geometry were highlighted. In some places, the pencil lines highlighted the deformation suffered by the canvases over time due to the bad distribution of the tensions generated by the cuts.

After careful evaluation, we secured all the parts where a new tear began to form using a polyester fabric soaked in a hot reactivated a thermoplastic resin. With these interventions, we have blocked the progression of the laceration and secured these particularly delicate areas.

Subsequently several humidification tests have been carried out, from creating a "humid chamber" that covered the entire surface of the painting; to another that included only a few strips; to humidification with a cotton pad; to cold vapour and to the use of the Agar-Agar rigid gel (a polysaccharide capable of gelling the water, releasing a controlled humidity supply on the applied surfaces). After concluding testing we finally decided to use the Agar rigid gel, which is the best product in order to moisten without soaking.

The Agar was made to gel in a thin film to improve its application and adherence, and with the *treckers* devices we began a gradual process of stretching so that the moistened and elongated cloth dried in the correct position (Figure 7).

To assess trips tension, we tried many types of *treckers*, specially built to adapt to our requirements, equipped with rubber bands, nylon thread and Kevlar® thread, the last one resulting the best because it was thin but strong and non elastic under stress.

The *treckers* fixed to the side of the stretcher allowed, with the use of wires anchored to the edges of the tear with a double-sided adhesive, to obtain the rapprochement of the edges by light traction, prolonged over time and carefully controlled. Repeated attempts were needed during several months because the support continued to move constantly as the memory of the canvas was stronger than our action.

Surface tension retrieval

By re-joining the strips we realized that it was impossible to proceed with tear mending by thread-to-thread, due the lack of fraying and the presence of acrylic paint that left little surface to create a joint.

Our choice, therefore, went to the butt joint process, that is a structural connection between the terminal part of each broken yarn and its counterpart.

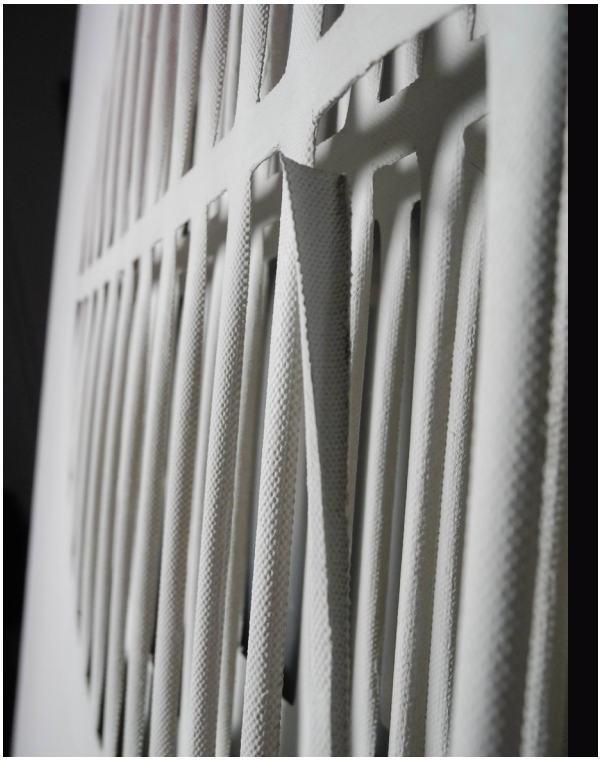

Fig. 5 – Particular deformed strip

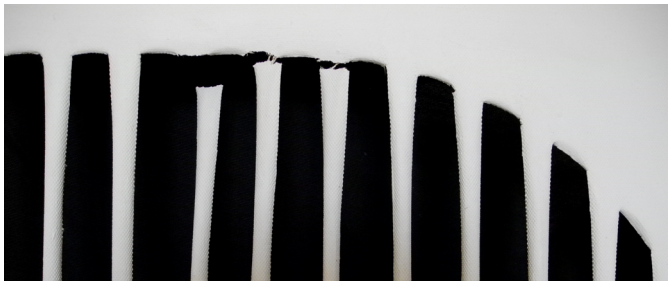

Fig. 6 – Particular detached strips

Fig. 7 – Agar in combination with the trecker to stretch the strips

Given the delicate phase of this intervention, we contacted two "tear mending" experts, Petra Demuth (2015) and Luigi Orata (2010), whose advice was very useful and supported our choices of testing the adhesives. The main features we were looking for in the adhesive were: elasticity, tensile strength, ease of application and stability.

Gluing tests have been performed on the sample with different resins (Polyamide, EVA® AC400 and EVA® 42036) and with natural glues (sturgeon glue and Arbocel® BWW40).

According to test results we opted for the use of Polyamide 5065 Textil Lascaux®, excellent for its applicability and tensile strength properties that well met our needs.

The process was quite complex and required the use of an optical microscope to ensure an accurate and correct application when placing the hot activated Polyamide at the thread's heads to form the joint. The use of the *trecker* allowed to approach and block the edges of the tear during the adhesive setting times. There was a strip that had undergone the greatest shrinkage and appeared damaged in such a way as not to withstand the traction of the *trecker*, it was necessary to apply an inlay to recreate the continuity of the texture and of the tension, also (Figure 8). In order not to overload the strips with excessive tension, it was necessary to apply a backing fabric on the back. Tests were also carried out to decide about the reinforcement fabric for the damaged strips, as: polyamide monofilament gauze (100 micron weave), Velo Vertal polyester (120 gr/m^2), Multibava polyester, Origam polyester (18 gr/m^2), T2596- 15 (20 gr/) and T50121A (10 gr/m^2) TNT in fiberglass, taffeta in fiberglass (25 gr/m^2), polyester fabric 7IT (150 gr/m^2).

After the shear test, every kind of fabric has been tested with different adhesive and subjected to traction and peeling forces to verify their behavior under stress.

Following all these tests we opted for the taffeta fiberglass (25 gr/m^2) that met the requirements of color, resistance and low deformability better than the other ones.

To apply the strengthening fabric to the junctions, some glues were tested: Loctite Super Attak®, Beva 371®, Plextol B500®.

Plextol B500® was chosen for its tenacity and elasticity. It was distributed with nap-bond system to prevent overuse, to allow transpiration, and therefore create uneven reactions under environmental fluctuations and form visible imprints on the surface, over time (Figure 9). The intervention on the external module was completed by filling and pictorial retouching of cut's areas, of insert and of some butt junctions. The underlying canvases had been subjected to a careful superficial cleaning. On the back of the second canvas, the cut-offs have been strengthened and the strip of canvas had been widened with suitable cylindrical counter forms.

The three canvases were then reassembled using their own nails inserted in the original holes (Figure 10).

Maintenance proposals

The work returned to the Museum in 2017 with a list of instructions for handling (with clean cotton gloves only) and for storage (an impact safe wooden box cushioned with highly resistant material - Ethafoam® - with grip points). Indications for microclimatic conditions were recommended (temperature <20°C, relative humidity between 40-50%, ultraviolet radiation <75 μ W/lm, illuminance <150 lux). Since 2018, it is exposed in an accessible location for maintenance but protected from accidental involuntary actions and direct solar light. Nowadays the Academy of Fine Arts in Bologna takes care of the maintenance (dusting, structural and aestethic check) and general monitorization of the work.

The conservative situation of other works by Nicolotti has made us to consider the use of protective cases, whose characteristics are very interesting.

For example a protective display case equipped with a humidity controller (like silica gel to allow the release and absorption of water vapor) or anti-UV glasses to protect the light-sensitive support, were suggested to the museum's Direction.

The plexiglass display cases have several advantages: they allow to reduce the changes in temperature and humidity, to protect from dust, from involuntary shocks, from the temptation to touch the paintings and even from acts of vandalism, moreover the protection with almost invisible anti-reflective glasses does not hinder the clear observation of the works (Mandrioli & De Nuntiis, 2007, pp. 32-33, 44-45, 59-62, 124-145).

However, a simple display case has some drawbacks: it is a structure added to the work, that even though transparent, is visible; moreover it can have a substantial weight depending on the size of the work, and it does not allow easy accessibility for periodic cleaning; finally, exposure to light or direct heat could cause inside the case a dangerous "greenhouse effect". All above considered, concerning *Modulo bianco a tripla struttura*, we support the need to protect the surface of the work with an air-conditioned showcase.

Conclusion

All materials and methodologies applied to the restoration of *Modulo bianco a tripla struttura* were accurately tested on a mock-up model but given the complexity of the work (fragile structure and formal perfection), the experimental character of the intervention (no references in the history of restoration of similar cases) and the non-ideal conditions of preservation (no air conditioning in the exhibition space), it is not possible to forecast the duration of the restoration.

While waiting for the display case, which we believe to be the best solution for the work, we can only rely on the programmed maintenance and the constant observation by the experienced staff.

Fig. 8 – bonding with Polyamide with the aid of the thermocautery

Fig. 9 – bonding of the tissue by means of thermocautery

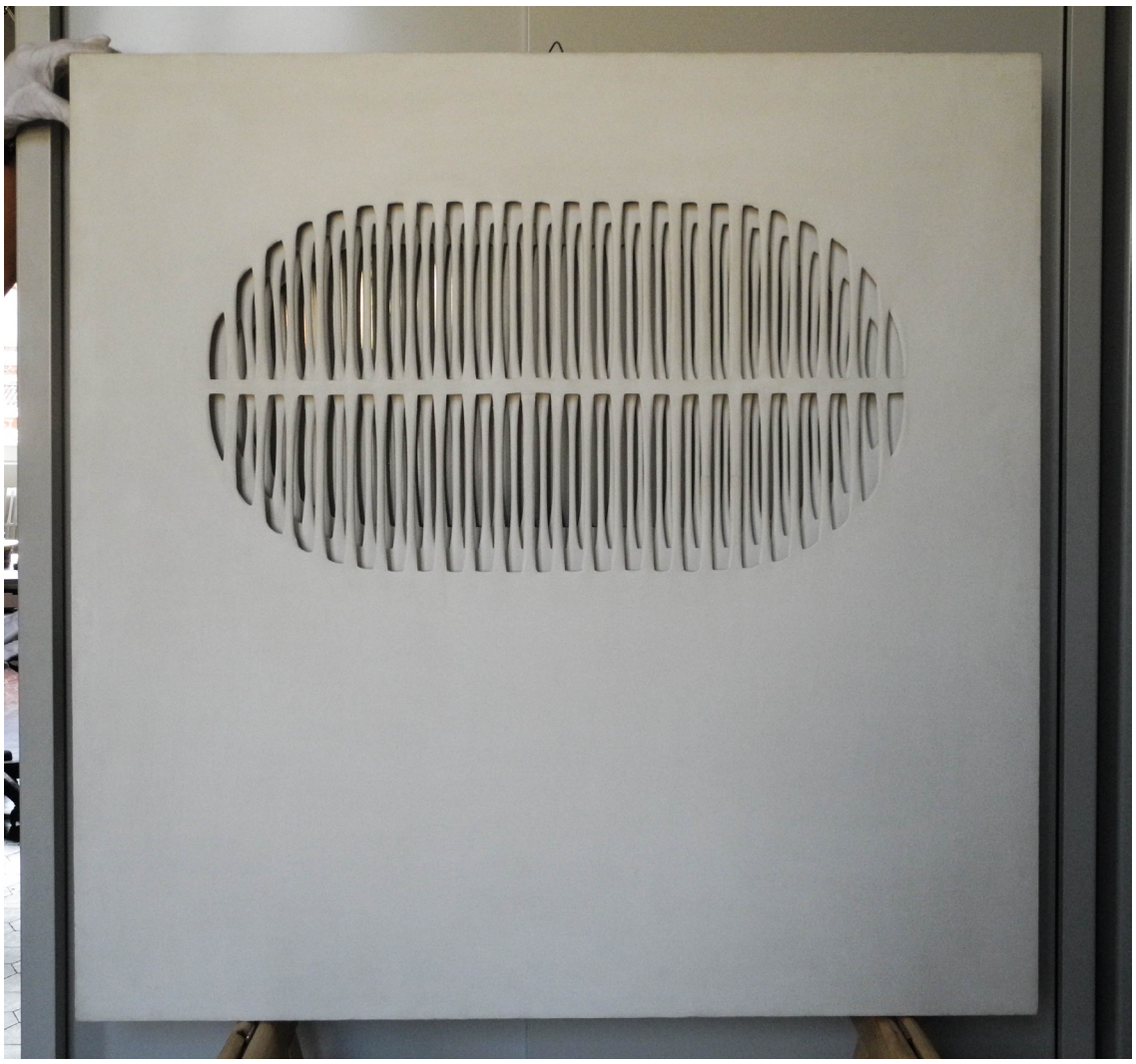

Fig. 10 – General view of the work after restoration

Overviewing the restoration of *Modulo bianco a tripla struttura* will provide useful indications for future interventions that deal with similar issues.

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