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Additional Information

A theoretical comparison between the restoration of two contemporary works of art made of plastic.

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Abstract

The article describes the processes of intervention carried out on two contemporary artworks and then analyses them from a theoretical point of view. The first work is entitled *Silere*, and it is an ink transfer on a molded polymeric material. The second work is entitled *Pasos en Falso*, and consists of an installation that includes a pair of shoes made by the artist, layer by layer, with vinyl latex, the laces of which have been made with human hair.

For each of the cases, a description of the material plane of the work, a description of its conceptual plane and a description of its biographical plane are made. Then, it is discussed in which paradigm each one of them has to be placed, specifying a hierarchy of its constituent elements, both from the material and the immaterial sphere. Finally, the discrepant factors that have determined the decision-making process are discussed.

The study focuses, not on the description of the intervention processes carried out, although these have been described for later discussion, but on the theoretical analysis that helps to understand decision-making, which is specific to each case. And this is done by applying the most advanced theoretical concepts on which the theory of contemporary art conservation is currently based, which have made it possible to compare the two interventions.

Furthermore, the works that serve as examples are particularly interesting, as they have been made with synthetic polymer materials, which were in a very poor state of conservation at the time of the intervention.

Keywords: Theory; Conservation; Contemporary art; conceptual plane; material plane; biographical plane.

1. Introduction

The complexity of the conservation of contemporary works does not lie solely in the need to apply a certain technical process of intervention, generally of great technical difficulty; nor in the knowledge of the most advanced materials for restoration. What is really complicated when it comes to preserving contemporary works is to achieve an understanding of the entity. This comprehension of what the entity really is is essential in order not to negatively affect substantial issues of the entity during the restoration process; or to not affect the works when establishing long-term conservation strategies [1].

Contemporary artistic production is made up of, among other things, ephemeral art, installations [2], new media art, live art, art that is unstable due to an inadequate combination of constituent materials, process art... The complexity and variety of these sectors of action give an idea of the difficulty in making decisions. Thus, it is obvious that prior theoretical analysis is fundamental,

but how can a conservator of contemporary art succeed in selecting the appropriate intervention treatments for each work, if on each occasion the matter and the artistic intention will be different? Must he know all the types of materials that the artist can use, as well as their possible combinations? Must he apply the same intervention criteria that he would apply to traditional works of art? These are questions that reflect the starting point of conservators, who have evolved the theory of conservation of contemporary art.

Our work presents two examples of contemporary works that have been intervened in the laboratories of the Polytechnic University of Valencia. For this purpose, a decision-making model has been applied which has analysed the issues to be taken into account when determining intervention treatments. In addition, it presents the theoretical study that determines the status of the work after the intervention, while analyzing how its current condition state, even after the intervention, affects its quiddity [3].

2. Research aim

The main objective of this research is to show how, in the case of contemporary art, each restoration intervention must be approached in a particular way given the impossibility of establishing common technical processes of intervention, and the absolute need to put the conceptual plane of the works first. This plane, which together with the biographical and material plane constitutes the entity, must be apprehended case by case if what we want is to establish adequate guidelines for specific conservation, experimentation, contemplation and restoration.

Thus, the theoretical analysis carried out can serve as a guide for conservator-restorers when faced with the need to establish intervention guidelines for works that are complex in both material and conceptual terms. This study is intended to be useful and serve as an example for professionals who must deal with the conservation-restoration of contemporary works, which are probably located in different paradigms. The determination of in which of them the work to be restored is located (paradigm of the processual, of the performance, of the death of the work, or of the scientific restoration), is the first step in the decision making.

3. A theoretical analysis of the intervention carried out on the artwork *Silere*.

Silere is an artwork by artist Beatriz Oliver created in 2016 as a result of technical experimentation. This work of art consists of six pieces made of polymeric material, which together constitute the word *Silere*.

In relation to the material plane we will begin by describing the nature of the constituent materials, as well as the execution technique. The artist herself has described the method of creation in an initial interview. The work has been created by depositing a certain amount of Vallejo® brand acrylic medium on a non-stick sheet, specifically the product "Matt Fluid Medium", an aqueous acrylic dispersion, which is more than 60% pure. This film-forming substance has been poured onto the film until a thin layer is achieved which, once dry, is transparent. The author then transferred a black and white photograph printed by the artist with inkjet ink onto this layer. In order for the transfer to be successful, the artist applied a layer of vinyl latex to the base, specifically the "Blumeplast" product of the Rayt® brand, and also applied the same product to both sides of the photograph's print. She then deposited the transfer on the thick layer of acrylic medium and pressed until the transfer of the printed image was achieved.

Once the whole set was dry, he cut the sheet into 4.2-centimetre strips and turned them, by means of pressure, into the shape of each of the letters that make up the word "silere". Finally, in order to give the pieces a certain rigidity, he applied a layer of the epoxy resin RESIDHIM 114 TA, an orthophthalic unsaturated polyester resin, of the Gazachim Composities® brand.

The condition state of the artwork was particularly serious. The degradation agents that have affected it are the environmental ones, which have produced alterations in the polymers; but also the anthropic ones, since the preventive conservation of the piece has not been the suitable one. The main pathology it presented was extreme fragility, due to the loss of plasticizers from the base polymer [4], a fundamental issue, since any sudden movement of the pieces could cause a crack or breakage. On the other hand, it should be noted that the letters had undergone enormous deformation, so that slight dimensional changes and a very significant deviation from their initial shape had occurred. For this reason, placed side by side, it was no longer possible to read the word "silere".

At the same time, all the pieces showed a strong stickiness due to the migration of plasticizers from the acrylic medium used as base material [5, 6, 7]. The degree of adhesion was so important that in some points the pieces had been joined together. There were also gaps in the different layers of the work, strong cracks that ran through the pieces in a longitudinal direction with the risk of breakage [6], abrasions and scratches, and a large amount of material adhering to the surface (paper fibres and environmental dirt). With regard to the transparency and tone of the polymer material, it should be noted that the work had suffered from strong yellowing and had acquired a strong opacity (Fig. 1).



Fig. 1. One of the letters of the word Silere showing the strong yellowing and opacity of the polymer.

As for the intervention process, it began with a gentle aspiration of the surface, with the intention of removing as many of the deposited particles as possible, as well as some paper and hair fibers, which were then eliminated.

Then, in order to achieve a complete cleaning, a solvent test was performed to check which was the most effective and innocuous to remove the remaining dirt, as well as the large amount of plasticizers present on the surface. The material proved to be sensitive to polar solvents, while ligroin, a mixture of aliphatic hydrocarbons, gave very good results.

The process of adhesion of cracks and fractures consisted of the application, thanks to a fine metallic tip, of a filmogenic substance of the acrylic type, Acryl 33, a 100% pure resin in aqueous dispersion, selected because it is similar to the base material of the artwork.

The last process of intervention consisted of returning each piece to its original shape, detaching the parts that had remained attached and re-molding each one of them by means of controlled pressure. To prevent the letters from being deformed again in the future, one of the most important actions of the process was the creation of a conservation box whose interior was filled with a sheet of plastazote®, a closed-cell cross-linked polyethylene foam, carved with the exact shape of the letters (Fig. 2, 3). The final storage of each one of them has been done by inserting a sheet of melinex® (Fig.4), a polyester film oriented biaxially, between the artwork and the plastazote®, to prevent posibles adhesions.



Fig. 2. When adjusting the exact shape of the letters thanks to the hot spatula.

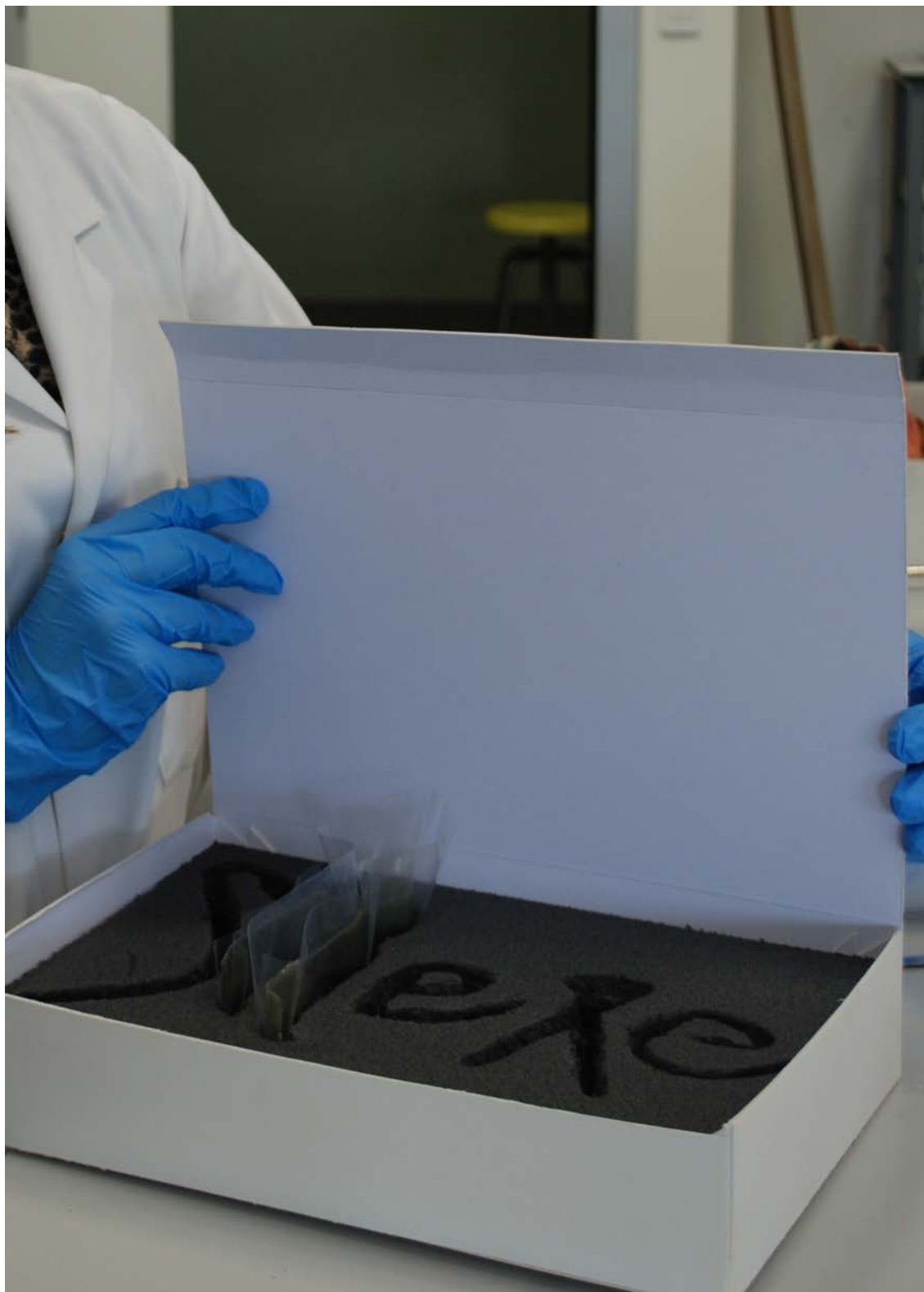


Fig. 3. The finished conservation box.



Fig. 4. You can see how the lettering is coated with Melinex® and the contrast between its transparency and the yellowish tone of the lettering.

As for the conceptual level of the piece, it should be noted that it is a work charged with great symbolism. During the interview with the artist, she pointed out that it is the result of the experimentation carried out in a set of four creations, where the use of polymeric materials was the central axis. This work is the most important for the artist in that series. The piece was created after a trip to Finland during which she was impressed by the greatness of nature, the reigning silence, the solitude and the cold ice. *Silere* means silence in Latin, the silence of nature in this case, and the contrast of this landscape with today's industrialised world, according to the author, is what constitutes the discourse of the artwork.

With regard to the biographical level [8], it should be noted that the piece, which was recently created, has been continually stored in poor conditions, has not been restored beforehand, and is a relatively important piece by the artist.

At this point, when the material plane of the artwork, the conceptual and biographical plane, the condition state and the treatment carried out are already known, we can elaborate a hierarchy of the constituent elements of the entity, both the material and the immaterial ones.

In the field of the material, according to the artist, we could place in first place the need for the word to be legible. The letters must maintain their initial form, otherwise, the meaning of the work of art would be strongly altered. If the letters could not return to their initial state, the experimentation of the entity could not take place, since the conceptual charge is deposited in the concept of silence and in the possibility of reading the term.

With regard to the biographical level [8], it should be noted that the piece, which was recently created, has been continually stored in poor conditions, has not been restored beforehand, and is, also, a relatively important piece by the artist.

Secondly, it is very important that the polymer material maintains its transparency. The acrylic medium used as a base material for the transfer must be translucent and clear, as it has been selected for these qualities. The artist links the transparency of the pristine material with the transparency of ice and snow.

Finally, the rigidity of the pieces is important to the artist, in fact, she applies a final layer of epoxy resin to achieve that rigidity in the letters, again, assimilating it to the rigidity observed in the ice.

When hierarchising constituent elements of an immaterial nature, we usually refer to elements such as light, sound, the participation of the public in the process of apprehending the entity, the sensory sensations received by the spectator... elements that are important for experimentation and which must have been exhaustively defined in the documentation processes of the work. In this case, perhaps the most important question is to ensure that the reading of the term "silere" is possible, and that the method of exhibiting allows for this reading. The distance from the public and the arrangement of the work of art once it has been exhibited would be matters to be determined by the artist and, in relation to the conservator-restorer, the latter should ensure that reading.

When we conclude a process of documentation of a contemporary work of art, the complete description of the various plans it consists of must be collected. In this sense, one of the most important questions to be studied is the type of paradigm in which it is situated [1]. In the case of the processual paradigm, what is essential in the artwork, what determines its consistency, is that the work evolves. The paradigm of scientific restoration includes the ethical and deontological code usually known in restoration. In the case of the paradigm of the performance, the artwork follows certain instructions and can exist at different times. In the case of the paradigm of the death of the work, it can not be experienced again.

At this point, we can reflect about in which of them we are in this particular case.

In relation to the hierarchy of material elements, we saw that the fact that the word can be read is fundamental to ensure that the entity's experimentation takes place properly. In this sense, the restoration has achieved the objective pursued and has returned the form to each of the letters.

However, the fundamental issue in this work is the impossibility of reversing the degradation process of the base polymer, which has led it to a point where it has lost its transparency and has acquired a strong yellow-green tone. As we had hierarchized the different constituent elements of the artwork, the transparency and rigidity of the letters were very important for the artist. We had placed them in second place of importance. In this sense, it is not possible to restore transparency and eliminate the effect of polymer oxidation, so in this case, the work of art is strongly affected. The conceptual part of it (the artist herself has continually insisted on the assimilation of the polymer to ice), has been seriously damaged, as the material, ruined, is not capable of providing the qualities for which it had been selected.

In addition, rigidity is another important element for the artist, because is the reason for the application of the epoxy resin, and yet, after the degradation of the polymer, this it is softened and ductile, to the point of adhering to itself, making it difficult to handle.

It is obvious, therefore, that the material of the work is damaged to the point that it is not capable of carrying the qualities that determine the consistency of our entity [9]. Scientific restoration is not capable of restoring those properties to matter. On the other hand, it is also obvious that the work cannot be placed in the paradigm of the processual or the performance, because that is not its nature, so it is necessary to think about including it in the paradigm of the death of the artwork.

Does that mean we should throw it out for being a worthless entity? We think not, logically. Our artwork has implicitly a series of values and affectivities that make it worthy of conservation, however, the aesthetic value has been lost. The work of art retains its historical, artistic, sentimental, iconic and authenticity value... but are we looking at a ruin or a ruinous relic? We think so. The artwork has to be conserved, and intervened, but the restoration has not been able to return to it those qualities that had been determined as essential to the entity, and therefore, it is not possible to bring it to the experimentation...

In relation to the analysis of the discrepant factors that have determined the restoration process [10], among all of them (artist's opinion, art market, iconicity, historicity, functionality, technical limitations, functionality, legislation...), those that have had more weight, those that have defined what actions to implement, would be the technical limitation (it is not possible to go back to a degradation process such as that of the polymer), and the opinion of the artist, since the intervention process was agreed upon with her, and at all times he agreed with the treatments applied.

However, we must be aware that we are dealing with the matter of a work of art, of an entity, which was correctly experienced for a limited period of time, but which, due to the passage of time and its effect on the polymer, can no longer be correctly experienced.

4. The work of art *Pasos en falso*: a theoretical analysis of its restoration and its current ontological status.

The work "Pasos en falso" is an installation by the artist Rocío Villalonga Campos [11]. The installation consists of several photographs and several pairs of clown shoes. The object of our restoration was the most important pair of shoes in the installation, which is elaborated by vinylic latex as a base material and also by human hair [12].

The data referring to the conceptual and biographical planes were also obtained. Specifically, the production process consisted of applying successive layers of vinylic latex, with a brush, to some clown shoes that had been purchased in the trade. This latex had red pigment suspended to achieve the desired color. The artist then painted a black line with commercial acrylic emulsion paint to differentiate the upper part of the shoe from the lower part. Later, she used human hair twisted into long strips to simulate the laces of the shoes, making them go through three holes made in the sides for this purpose.

In relation to the condition state the piece, it was seriously damaged. The main problem it presented was the migration of plasticizers from the vinylic latex used to form the shoe. Plasticizers improve the flexibility, ductility and tenacity of the polymers, reducing hardness and fragility [13]. Their small molecules occupy positions between the large polymer chains, increasing the distance between chains and reducing secondary intermolecular links. The migration loss of these compounds alters the mechanical properties of the polymers and has serious consequences [14], as in this case. For this reason, the shoes were adhered at many points on themselves, having lost their characteristic volume and shape. In addition to the characteristic stickiness caused by the loss of plasticizers, there were a large number of cracks in the polymer material, human hair adhered and surface dirt.

The human hair, on the other hand, was very damaged. Keratin is the main component of hair, and is a fibrous protein with a high amount of cysteine, a non-essential amino acid. The hair shaft is composed of the medulla, which is made up of keratinized cells; the cortex, which is covered with a tegument; and the cuticle. The cuticle is made up of keratinized dead cells that may be well attached or separated at the ends, forming scales. In our case, the hair cuticle was strongly damaged presenting an intense desquamation, due to the action of light and the lack of humidity. In addition, the hair had polymer particles adhered and a large amount of surface dust.

The intervention process began with the superficial cleaning of the polymer. After micro-aspiration, cleaning was carried out following solubility tests [15]. On this occasion, the cleaning was carried out by water treatment [16,17]. It was observed that the application of a small amount of moisture gave the polymer a certain elasticity, so that after the surface cleaning, it was decided to return the shape to the shoe by adding tiny drops of deionized water by means of the ultrasonic vaporizer AGS2000 Aerosol Generator S. [18]. In order to maintain the shape achieved in each session, an insole carved from expanded polystyrene was used with the exact shape of the shoe, which was then inserted inside it. This insole was covered with Polyfelt, a non-woven fabric made

of PP (Polypropylene) fibres with a UV filter. On the other hand, humidity helped to remove the adhered parts and the small cuts in the polymer were reinforced with strips of Japanese paper impregnated with carboxymethylcellulose, a sodium salt of the glycolic acid of cellulose, diluted in 3% deionized water.

As for the human hair, once it was untangled and micro-suctioned, it was sewn to a tulle so that an aqueous treatment could be applied by immersion. Several baths were carried out in a solution in deionised water of Teepol at 0.2%, a neutral detergent based on a mixture of sodium lauryl ether sulphate and dodecylbenzenesulphonic acid. The soap was then rinsed through several baths in deionised water. Finally, a bath was applied in a solution composed of deionised water and glycerine in a proportion of 5%.

Once the shoes were cleaned and returned to their initial shape thanks to the internal lined expanded polystyrene mould, the hair cords were introduced through the holes and the set was definitively assembled.

At this point, after briefly explaining the intervention, we can begin to theoretically analyze how it has been determined, and what the current status of the artwork is. We can also analyse in which paradigm it should be placed according its nature.

Beginning with the conceptual plane, it should be noted that the artist herself, in the interview, points out that these shoes are of great importance to her, and would therefore treasure values of an emotional as well as an aesthetic nature. The artwork forms part of an initial period of production of objectual-type works that deal with personal themes. On this occasion, it deals with the theme of the individual's need for social acceptance, and in this sense, it plays with the symbolism of clown shoes.

With regard to the biographical plane [7], we can point out that the artwork has been stored in the laboratory of the artist for a long time, also that it has not been previously restored and that it is charged with a high symbolic value for its creator.

With regard to the hierarchical structuring of the elements that make up the entity, it must first be understood that the shoes themselves do not constitute the work of art. These elements are part of a larger entity, the artistic installation, which is the artwork, and which must be apprehended as a whole.

On the material plane, the importance of the shape of the shoes is fundamental. The artist herself points out the importance of it "...the idea of the work has been totally lost, since clown shoes are not recognized as such, due to their advanced degradation". Thus, form is absolutely linked to meaning and since shoes are not recognizable, artistic experimentation can not take place.

Thus, the most important thing, which is in first place in the hierarchy of constituent elements, is the form of the matter, not so much if it has an aged appearance, or presents cracks. What was fundamental in the process of intervention was, above all, that the shoes should be understood as such again. Therefore, all the effort was focused on restoring the elasticity of the polymer to recover its shape and maintain it, even cutting the material in small points to allow its recovery.

For their part, the hair cords had to be functional again, they had to be rehydrated to get back their initial appearance and twist, so that they could pass through the side holes.

In view of the dilemma of having to apply moisture to the polymer, which could produce a certain swelling, this being controlled, and applied in tiny drops, and in view of the need to cut the polymer with a scalpel, sometimes, to facilitate detachment, the imperative of recovering the initial appearance was prioritized.

Thus, once the form has been recovered (Fig.5), and given the possibility of mounting the installation in such a way that the public can apprehend it correctly, we consider that this artwork, although in a bad state, can not be considered within the **paradigm of the death of the work** [1], nor that it is a **ruin**, since its material is capable of facilitating the experimentation of the entity,

even if it is not in an optimal state. For this reason, since the artwork does not fall within the paradigm of the performance, nor that of the processual, it is worth studying whether it would fall within the paradigm of scientific restoration, and we think that it would, since the importance of the pristine matter is fundamental (the shoes have been executed layer by layer by the artist and could not be replaced in any way). The restoration treatments have managed to recover it, because if the form is recognized, the work of art can be brought to the experimentation again.



Fig. 5. Fig. 5. The shoes regaining their initial shape.

In relation to the discrepant factors that have determined the treatment, the artistic intention (understood on this occasion as that which determines the essential qualities of the entity) and the technical limitations, are interesting for analysis.

Factors such as the iconicity of the piece or its historicity have had little influence, as it is not a work of great media impact and has been created only recently. The matter is loaded with values [19] and must be preserved and treated. In this sense, only the technical limits have determined the result of the treatment, since it is not possible to go back to the extreme degradation of the polymer.

5. Conclusions

However, it is not possible to propose a process of intervention of a contemporary art work if it has not been previously determined in which paradigm we should place it.

In the case of the processual paradigm, the matter mutates or is transformed on many occasions, this process being what constitutes the essential. In the case of the paradigm of the performative the matter can be substituted, without affecting the authenticity of the entity, constituting this process something natural in front the need of correct experimentation of the entity and in front the need of bringing it to the world of the sensitive.

To experience a work of art is to understand its qualities, to understand and appreciate its substantial constituent elements, to know in short what constitutes its quiddity [3], what is essential in it [20], which places it within a category.

On the other hand, the hierarchization of constituent elements, both on the material and the immaterial sphere, is necessary and must be done before making decisions.

In the cases of intervention analyzed, the base material of the artworks, the one used for the concretion of the idea, was a polymeric material. In both cases, its condition state was extremely deficient. In both cases, the intervention treatments available today were insufficient to return the polymer to its initial state. Thus, the restoration treatments had their limitations. And yet, in the first artwork, once these limited intervention treatments were applied, the status of the artwork was that of ruin or ruin-relic, since after analysing which elements were substantial for the entity to be experimented with, it had been determined that they were elements such as transparency and hardness, since they were assimilated, thanks to the conceptual plane, with the quiddity of the artwork, with the essential in it. Once the restoration process could not recover those essential constituent elements, in this case from the material plane, the work of art could not be apprehended by the spectator, and therefore could not exist. However, we would have in front us the material testimony of what it once was, that is to say, we would be in front a contemporary ruin, in front a material not able of being the support of the entity.

In the second case, it may seem that the situation is similar, as we start from the completely degraded polymer material. However, according to the artistic intention, the substantial constituent elements of the entity are based on the recognition of the shoes as such, on the recovery of their shape. From the moment that this is possible and the installation can be understood by the spectator, experimentation is feasible, and therefore, the status of the artwork, although the degradation of the material can be appreciated, can not be classified as ruin, since the matter is capable of carrying the meaning, and is able to bring the entity to the world of the sensitive, to the world of the phenomenological, to the world of the apprehensible through the senses.

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