However, this three-dimensional space is not a measurement tool: this model allows for a better understanding of the factors that make up conservation objects, but it does not mean that each of these factors can be easily or objectively quantified, nor that a precise limit exists separating conservation objects from non-conservation objects. The logic behind the category of conservation objects can be revealed through this representation, but part of its efficiency would be lost if it were thought that the 'conservability' of an object could be precisely evaluated.

Chapter 3

Truth, objectivity and scientific conservation

For many people working in conservation at the beginning of the twenty-first century, some classical principles, and especially those of scientific conservation, are essential to the activity itself. Some of them are known to everybody, but there are others (perhaps the most fundamental ones) that may not be that evident. To a certain extent, they constitute an infrastructure that, while pervading the whole activity, can go unnoticed. In this chapter, some of the underlying assumptions that constitute those theories will be described and analysed, in an attempt both to prove that they really exist, and to better understand them.

The pursuit of truth in classical theories of conservation

As Muñoz Viñas (2003) has put it, classical theories contemplate conservation as a '*truth-enforcement*' operation. Although they do not agree upon exactly where that truth resides, since its very inception, the main purpose of conservation is to maintain or reveal an object's *true nature* or *integrity* (see, for instance, UKIC, 1983; Fernandez-Bolaños, 1988; Caple, 2000; Clavir, 2002). Similarly, as Orvell has stated, 'conservation and preservation (let alone

restoration) have no meaning or purpose without a concept of the real, the original, the authentic' (Orvell, 1989).

According to Clavir (2002), classical conservation emphasizes three kinds of integrity: physical, aesthetic and historical. Physical integrity refers to the material components of the object, which cannot be altered without violating it. Aesthetic integrity describes the ability of the object to produce aesthetic sensations upon the observer; if this ability is modified or impaired, the aesthetical integrity of the object is thus altered. Historical integrity describes the evidence that history has imprinted upon the object – its own, particular history. In a somewhat different vein, Muñoz Viñas has suggested that for classical theories, the 'integrity' of an object may lie upon four main factors: (1) its material components, (2) its perceivable features, (3) the producer's intent and (4) its original function (Muñoz Viñas, 2003). Most classical theorists defend a given combination of 'integrities' as being 'truer' than other possible ones, by stressing the relevance of a particular integrity or truth factor, while just occasionally mentioning the others. However, in any case, all of these theorists have retained the basic notion that conservation should always be a truth-based activity.

In conservation, however, these views often conflict. Choices have to be made, because implementing each and every one of them at the same time is not possible. Ruskin, Morris and the people of the Society for the Protection of Ancient Buildings did value material components and historical integrity. Changing the buildings, even in the name of restoration, was considered:

> ... the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered; a destruction accompanied with false description of the thing destroyed. (Ruskin, 1989)

As such, they strongly opposed any kind of restoration, favouring preservation, and accepting decay as an added value. For Viollet-Le-Duc, on the other hand, it was the producer's intent

and the aesthetic qualities of the object what actually determined an object's true nature – even if the object never actually existed in this *pristine*, ideal state. In order to fulfil the producer's real intentions, and to confer on the object the stylistic integrity it should have had, the material and historical integrities of the object were entirely dispensable. Even though the works were based upon solid academic studies, many of his restoration works (Notre Dame of Paris; the cathedrals of Amiens, Chartres and Reims; the château of Pierrefonds; the church of Sainte-Marie-Madeleine in Vezelay; etc.) are now seen as almost Disney-like re-creations.

In the latter nineteenth century, Boito's *restauro scientifico* gained wide acceptance. This new theory retained truth as a guiding principle but stressed that truth was objectively determinable, and thus it was to be achieved by objective methods. In this way, personal appreciations would not step in the way of conservation and discussions would be avoided – or at least, drastically reduced. Of course, the best, and perhaps the only way to establish objective truths was the way of science.

Aestheticist theories

Around the mid-twentieth century, two somewhat new conservation theories gained momentum and popularity: the aestheticist theory of conservation and the *new* scientific conservation theory. Both the theories are essentially classical, as both of them seek to preserve and recover the integrity of the object of conservation. Aestheticist theories are centred around the notion of aesthetic integrity, which is a basic asset of any artwork that conservation should strive to preserve and which restoration should recover whenever possible, while at the same time preserving the imprints history has left upon the artwork. These are conflicting aspirations: respecting history while at the same time recovering the artistic integrity of the object is an almost impossible task.

This basic contradiction was described by Philippot as 'the heart of the problem of restoration' (Philippot, 1996).

To solve this dichotomy, aestheticist conservation theorists such as Brandi or Baldini have emphasized the need for the conservator's additions to be easily distinguishable from the original remnants; by doing this, the conservator can restore the object's aesthetical integrity while avoiding the creation of a 'historical forgery'. To be a legitimate, truth-respecting operation:

> Il restauro (...) non dovrà presumere né il tempo come reversibile né l'abolizione della storia. L'azione di restauro inoltre, e per la medesima esigenza che impone il rispetto della complessa storicità che comete all'opera d'arte, non dovrà porsi come segreta e quasi fuori del tempo, ma dare modo di essere puntualizzata come evento storico quale essa è, per il fatto di essere azzione umana, e di inserirsi nel processo di trasmissione dell'opera d'arte al futuro. (Brandi, 1977)

> [[Restoration] cannot presume that time is reversible or that history can be abolished. Furthermore, the act of restoration, in order to respect the complex historical nature of the work of art, cannot develop secretively or in a manner unrelated to time. It must allow itself to be emphasized as a true historical event – for it is a human action – and to be made part of the process by which the work of art is transmitted to the future.] (Translation from Stanley Price, Kirby Talley and Melucco Vaccaro, 1996)

Classical aestheticist theories do attempt to bridge the gap between historical truth and artistry. In fact, as Brandi has stated, the only 'legitimate' conservation treatment is that which is performed 'colla più vasta gamma de sussidi scientifici' ['with the help of the widest range of scientific techniques'] (Brandi, 1977). Furthermore, artistry is treated like an almost objective feature of the object:

> ... occorre allor che l'azione dell'uomo (...) non sia in nessun caso modificante bensì esaltante e chiarificante dell'esistente; che sia un intervento critico non nel senso del gusto nè personale ma estratto come regola dalla stessa realtà dell'oggetto. (Baldini, 1978)

> [... the action of man (...) should not alter in any way the work of art, but instead emphasize and clarify it. This should be a critical intervention that derives from the reality of the object and is unaffected by taste of personal inclinations.] (Translation from Stanley Price, Kirby Talley and Melucco Vaccaro, 1996)

This attraction for objectivism is very characteristic of all twentieth-century classical truth-seeking conservation theories. Objectivism is, in fact, closely related to the notion of truth, since objective truths are considered the most valuable ones. By pursuing truth *and* objectivism, aestheticist theories, to a great extent, suffer from the theoretical problems that are outlined in the following chapter. However, classical aestheticist theories also have a specific problem that greatly limits their actual usefulness in the conservation world: they only apply to a single category of conservation objects, that of artworks. Scientific conservation views do not have that limitation.

Scientific conservation

Boito or Beltrami had defended the role of *soft* sciences in conservation decision-making, but in the first half of the twentieth century, the new 'scientific conservation' came into play. It was characterized by its emphasis on the use of *hard* science in conservation. Though there are earlier examples of hard scientists occasionally working to solve conservation problems (Davy, Chaptal, Augusti, Doerner, Bonnardot, Faraday, Herbst, Rathgen, etc.), the scientific approach to conservation became widely recognized between 1930 and 1950. In 1930, the *Conférence internationale pour l'étude des méthodes scientifiques appliquées à l'examen et à la conservation des oeuvres d'art* was held in Rome. In 1950, the International Institute for the Conservation of Museum Objects (presently known as the International Institute for Conservation of Historic and Artistic Works, a strong advocate

of hard scientific conservation) was incorporated. Between these two key events, many scientific laboratories were created in relevant museums and conservation centres around the world, such as those of the Istituto Centrale del Restauro, the Doerner-Institut, the Fogg Museum, the Louvre or the London National Gallery.

This scientific approach to conservation gained momentum, and in the second half of the twentieth century, it obtained some recognition as the best approach to conservation problems – the only valid one, actually, since non-scientific approaches were disregarded as obsolete at best, or as a product of ignorance in many other cases. Conservation became a university discipline, professional bodies were created, national and international associations emerged and publications flourished. The role of science in conservation became apparent through the use of scientific techniques but also, and more conspicuously, through its symbols: microscopes proliferated in the workshops – which now became 'laboratories' – conservators in white coats became a common sight, and test tubes and reactive chemicals invaded the laboratory shelves.

However, the influence of science was not just cosmetic, as it also cast its own goals upon the whole activity. As early as 1947, conservation came to be contemplated as:

> Any action taken to the end of determining the nature or properties of materials in any kinds of cultural heritage or in their housing, handling, or treatment, any action taken to the end of understanding and controlling agencies of deterioration, and any action taken to the end of bettering the condition of such holdings. (Staniforth, 2000)

Thus, conservation came to include not only actual conservation but also 'any action' that leads to *knowing* the properties of materials and to *understanding* deterioration processes. Since producing knowledge and improving the understanding of physical phenomena have always been noble goals of science, this view warranted scientists a relevant place in the conservation scene.

The notion of conservation-as-research has pervaded scientific conservation, and thus conservation at large, for a long time. In the 1984 code of ethics promulgated by the International Council of Museums (ICOM), for instance, it is stated that:

> An intervention on an historic or artistic object must follow the sequence common to all scientific methodology: investigation of source, analysis, interpretation and synthesis. Only then can the completed treatment preserve the physical integrity of the object, and make its significance accessible. Most importantly, this approach enhances our ability to decipher the object's scientific message and thereby contribute new knowledge. (ICOM, 1984)

This evolution has had a strong impact on conservation, which has been beneficial in both technical and social ways. The advent of hard science in the conservation field has been one of the most important single factors in the development and shaping of the conservation profession. However, it is striking that no relevant theoretical effort has been made to justify the validity of this approach. This is in marked contrast with the theoretical elaborations made by 'soft' scientific conservators in the late nineteenth and early twentieth century. Curiously enough, 'soft' scientific conservation theorists were neither soft scientists nor conservators; they were architects.

An observation on the role of architects in conservation theory

For many reasons, architects have led the conservation world in matters of principles and philosophy. For many centuries, architects have enjoyed high social status, which in the nineteenth century allowed them to have formal academic training and access to cultural resources far beyond the reach of other professionals. In that century, architects created strong national and international professional bodies and were willing to promote theoretical and technical debates on many aspects of the profession. Camillo Boito

himself was the President of the Milanese Architects' Guild and a Professor at the College of Engineering and Architecture of Milan.

Boito elaborated his theory of the 'restauro scientifico' 50 years before scientific conservation effectively reached the non-architectural conservation world. This gap between architecture conservation and the other conservation fields is very revealing. It suggests that architectural conservation is somehow distinct from the rest of the conservation fields, and, indeed it is distinct in several important aspects:

- Social recognition: architecture is a well established and highly valued profession, while conservation has not enjoyed social acceptance until recently.
- Academic recognition: Architecture has always been one of the major arts. This long tradition has warranted it a place in higher institutions of knowledge.
- Formal training: Until the mid-twentieth century, conservation was learnt through apprenticeship, while architecture has been taught at universities for a long time. This has provided a recognized system of qualification, which has served to avail the architects' ability and preparation, and to confer on them an authority which conservators lacked until recently.
- Pre-existence of a large body of knowledge: For a number of reasons, architecture has produced an important body of knowledge, which has passed the test of time. The body of knowledge existing in other conservation fields is not comparable to that of architecture in extent or in nature.
- Nature of knowledge: The conservation architect does not need the ability to readily detect and interpret the extremely subtle symptoms that only experienced conservators can perceive, nor the manual dexterity required to perform a successful conservation project. While other conservators 'perform surgery', architects design abstracts conservation projects that are then implemented by other people (masons, carpenters, painters, etc.).
- Building conservation involves many people: Architects have to act as team directors, as the actual conservation process requires the work of many other professionals. In other conservation fields, the conservators are often the ones who carry out most of the conservation process.

Buildings are different from other conservation objects for a number of reasons, which can further explain the peculiarities of architectural conservation:

- Buildings are more visible and socially relevant than easel paintings, prints or archaeological objects. They often constitute powerful local symbols of identity.
- In most cases, the conservation of a building is much more expensive than that of any other object. As such, it is only logical for the degree of scrutiny to be greater than in other cases.
- Architecture objects are experienced by users in a much more direct way than other conservation objects. In many cases, conserved architecture objects are experienced by users (inhabitants, visitors and workers) not through mere contemplation, but through direct and extended contact. Buildings are usually not only seen, but also touched, walked through, stepped on, smelled, felt, *experienced* through different senses and in many more ways than other conservation objects are.
- Conserved buildings fulfil many material functions: Buildings are usually expected to house people, to be a workspace, to function as showrooms, etc. The conservation process must not only conserve the building, but it must also guarantee that it is useful for people with varying needs and expectations.

- Conserved buildings are subject to strict norms: In most societies, architecture is ruled by a plethora of technical norms and standards which have been designed to ensure its safety and efficiency. Architects have to abide by these standards, which often collide with pure conservation interests, and which further complicate their work. In other conservation fields, these rules are much more relaxed, and/or have been designed with conservation purposes in mind.

In spite of these differences, building conservation principles are not substantially different from the principles of the rest of the conservation fields. The core ideas remain valid and may be used in both the cases. Boito, Beltrami, Dezzi Bardeschi, Ruskin, Bonelli, etc. have written about building conservation, but building conservation is still conservation. The first consequential theoretical elaborations by specialists in other conservation fields appeared in the twentieth century (100 years after Ruskin and Viollet-le-Duc). These elaborations have greatly benefited from the reflections of architects upon topics that are common to all conservation fields, but they also include different views and concerns. Contemporary theory of conservation, therefore, has a wider scope, since it has been developed not only by (and for) architects, but also by (and for) conservators from many different fields.

What is 'scientific conservation'?

Around the mid-twentieth century, the notion of scientific conservation seeped from the architectural field into the conservation fields that deal with non-architectural heritage, such as paintings, sculptures, archaeological objects or documents. Nowadays, scientific conservation is a notion that is not frequently mentioned in architectural conservation, where it is perhaps taken for granted. Instead, it is a popular notion among the rest of the conservation fields.

This modern scientific conservation is not identical to Boito's *restauro scientifico*, as modern scientific conservation is applied to a wider kind of heritage and makes a more extensive use of hard, material sciences. In the following pages, the term 'scientific conservation' refers to this modern, post-1950s notion of scientific conservation. It will be analysed in some detail, for two reasons: first and foremost, because it exemplifies many of the principles common to all classical theories, and thus many of the reflections made upon it can be safely applied to other classical theories; second, because it is the prevailing theory that, to some extent, contemporary conservation theory has reacted against.

Scientific conservation is not a well-defined notion, and its practice may adopt a variety of forms. In this respect, a preliminary distinction between scientific conservation and conservation science is necessary. Obvious as it may appear, it is not always clear that conservation science is a branch of science which is practised by scientists, while scientific conservation is a branch of conservation which is practised by conservators. This confusion arises for two principal reasons. The first reason is that neither conservation nor science is a clearly defined activity. The second is that, in practice, these notions are often mixed and intertwined, so that it is often hard to ascertain exactly whether an assertion is directed towards scientific conservation, conservation science, pure science or the role of science in conservation.

Much has been written regarding the indefinite nature of conservation, but much more has been written regarding the indefinite nature of science. Apparently, science is a well-established notion, and everyone knows whether something is 'scientific' or not. However, this is just an illusion. Most people's perception of something being scientific (its 'scientificity') rests upon trust, belief and a set of *clichés*, such as an *atrezzo* of white coats, glass jars and tubes, complex apparatus with buttons, cables and lights,

strange graphs with tiny incomprehensible labels, etc. Clavir has summarized these beliefs as follows:

1. There is a real world 'out there' that operates according to natural laws that can be examined and understood (empiricism).
2. A causative agent produces a repeatable effect (determinism).

(...)

4. Solutions must be confirmed before being accepted: control groups, repeated experiments and other methods are used to eliminate the possibility of results being caused by other factors.
5. Assumptions must be acknowledged and tested.
6. Vague statements are not acceptable. However, absolute precision is tempered by an acceptance of levels ranging above or below an average point.
7. The world should be explained according to scientific knowledge (i.e. one should rely on other scientists rather than relying on religious/spiritual ideas or what people say they know but cannot prove scientifically).
8. One should respect broad areas of knowledge that are already scientifically established (paradigms).

(...)

12. It is important to respect quantification and mathematical expression, including statistical probability, as the language of science (Clavir, 2002).

In fact, if carefully examined, the quality of 'scientificity' is far from clear. Notions that relate scientific knowledge to knowledge that is derived from experience (or even from *repeatable* experiences) are out of the question, since this would include the knowledge of non-scientific artisans, which is acquired through sheer, repeated experience. The idea that science is characterized by the fact that it demonstrates scientific truths through scientific means is not correct either, not only because the defined term is included in the definition, but also because, as Popper showed as early as 1934, the very idea that science *demonstrates* things is

not correct: scientific truths are not those which are demonstrated to be true, but rather those which cannot be demonstrated to be wrong (Popper, 1992). To make a long, complex story short, it should be recognized that 'science is what men call science' (Wagensberg, 1998) much as 'physics is what is included in *Das Physiks Handbuch*' (Bueno, 1996).

Things are also confusing when it comes to defining not just 'scientific conservation' but 'conservation science'. Three different approaches are discussed here, covering a wide range of notions. The first of them is the most open notion of conservation science, which encompasses a wide range of scientific research, both with and without direct impact on conservation practice. This view is perhaps best understood sifting through the contents of many prestigious conservation magazines – such as *Studies in Conservation*, *Restaurator* or *The Conservator* – or through the proceedings or acts of many conservation meetings and congresses. These publications, and other similar ones, contain research articles that are not often relevant to practicing conservators, while most of them are relevant to conservation scientists. They could be considered *endoscience*: science for scientists. This is not necessarily a criticism: there is nothing wrong with them, but they have to be approached bearing in mind that they are based upon a wide, open notion of what conservation science is.

Other people have a more restricted view of this subject. According to this view, the characterising feature of conservation science is the inclusion of real works within the experimental procedures. Curiously enough, the actual relevance of conservation science to conservation practice is not a defining factor:

> To put a boundary on the subject of conservation research, we require that it involve some art object or material. If several adhesives are studied 'in the pot' by measuring variables such as viscosity, density, shelf life and fume toxicity, then the subject is adhesive chemistry. Even if such work is done by a conservation scientist and

> is relevant to conservation practice, it is not conservation science as defined here. If one applies the same adhesives to some art material and then measures properties, such as strength and discolouration, then the study falls within conservation science. (Hansen and Reedy, 1992)

The third view is different from both the first and second views, as it makes relevance to conservation the key feature of conservation science. This is the view shared by most practicing conservators, but also by conservation scientists such as Torraca (1991, 1999), De Guichen (1991) or Tennent (1997):

> ... the prime function of a conservation scientist [is] to provide knowledge or technical information which enables more effective preservation and conservation of cultural heritage, be it fixed or moveable cultural property. (...) My opinion is that only when conclusions are drawn from that examination which directly help the practice of conservation can it truly be called conservation science. (Tennent, 1997)

The (missing) theoretical body of scientific conservation

As has been mentioned above, no consequential theoretical elaboration has been made upon scientific conservation, aside from the ones made in the late nineteenth and early twentieth century. There are plenty of declarations of adherence, but their principles and grounds have rarely been discussed. Sánchez Hernampérez has made an interesting analysis on the evolution of conservation theory; to conclude that the theoretical debate actually ended when scientific conservation came into play:

> ... a partir de Boito, las aportaciones teóricas en conservación han sido meramente testimoniales. (...)
>
> El debate teórico empieza a languidecer a partir de los primeros años del siglo XX y en la actualidad parece reducido a la nada, siendo sustituido por investigaciones técnicas: metodología de la

> reintegración, estabilidad de los materiales originales, idoneidad de los tratamientos y reversibilidad, siendo incluso notorios los intentos por derivar el debate teórico al meramente material. En las publicaciones periódicas dedicadas a la conservación los aspectos filosóficos de la conservación han pasado a un plano muy discreto salvo los intentos de fijar códigos deontológicos acordes en su mayor parte con lo expuesto por Boito. (Sánchez Hernampérez, s.d.)
>
> [... since Boito, theoretical reflections in conservation have been merely testimonial.
>
> (...)
>
> The theoretical debate began to subside in the first years of the twentieth century; today, technical research seems to have substituted it: techniques for loss compensation, original materials stability, suitability of treatments and reversibility; even attempts to substitute a merely material debate for a theoretical one have become very noticeable. In periodicals on conservation, philosophical questions have moved to a very secondary position, except for the attempts to establish codes of ethics, in most cases according to Boito's views.]

Boito was the first to emphasize that the *target state* of a conservation process should not be dictated by personal tastes (as with Ruskin's appreciation of the romantic ruin) or by personal hypotheses over how a monument should have been (as with Viollet-le-Duc), but rather by objective, scientifically grounded facts.

Boito's notions became quite widespread and were somewhat distorted in the twentieth century. As science became what Feyerabend described as a 'universal religion' enjoying 'an almost superstitious veneration' (Kirby Talley Jr, 1997), no need to justify its use in any field seemed to be necessary, and thus, no theoretical reflection preceded or justified its use in conservation.

Another likely reason for this striking absence lies in science's aspiration to *objectivity*. The objectivity of scientific conservation (its revolving around objects and facts, and not around ideas) may have led to the belief that no philosophical theory is required

for it to function. Scientific conservation deals with materials, not ideas, and in doing so, it employs its tools to apprehend the material world as hard sciences do.

Scientific conservation, though being the most notable manifestation of objectivity in conservation, is not well defined, and lacks a coherent theoretical, epistemological body. Any critical or analytical reflection will suffer from this imprecision; when it is not entirely clear what is at the centre of the discussion, any idea or reflection may be disregarded by negating not the idea or the argument itself, but by negating its subject or some of its features. In different academic forums, 'scientific conservation' can therefore be an encompassing conservation ideology or even a 'new paradigm', or a sort of enhanced traditional conservation, or anything in between. Most often, however, this confusion is unintended and unconscious: the notion of 'scientific conservation' of a conservation scientist and that of a non-conservation scientist may differ greatly, not to mention those of an art historian or even a layperson.

This is especially interesting given the fact that scientific conservation is a prevalent model of conservation in most *Westernized* countries. It has been argued that science is even essential to conservation: an intrinsic feature, a requisite for conservation to exist as such. In this case, 'scientific conservation' would be a redundancy, since there is no such thing as 'non-scientific conservation'. Coremans, for instance, has talked about 'aesthetic surgery' to describe the kind of restoration that flourished after the Renaissance, and which was mainly devoted to repairing and completing broken and missing parts:

> ... aesthetic surgery (...) gave a work of art a pleasant appearance, even if such surgery greatly accelerated its deterioration. Thus, at this stage the restorer restored, but did not yet conserve. (Coremans, 1969)

Pure restoration, thus, preceded conservation: out of the craft of restoration came conservation. This happened when restoration was pervaded by two related principles:

> How and why did conservation emerge from restoration? Why did it come to define its field according to two values that are in marked contrast (...) to the values of restoration (...)? These two values are: (1) a belief in the fundamental need to preserve the integrity of the physical object (as well as its aesthetic and other qualities) and (2) a belief in scientific inquiry as the basis for the proper preservation and treatment of collections. (Clavir, 2002)

The principles of scientific conservation

Scientific conservation actually emanates from an elliptic but overwhelmingly powerful set of principles: it is guided by the unspoken *material theory of* conservation which is, in turn, based upon the need to preserve the object's material 'truth', and the belief in scientifically grounded knowledge. The first assumption (the need to preserve the object's material truth) can be divided into two different principles: first, it emphasizes that scientific conservation has a fundamental need to preserve the integrity of the object, and, therefore, that it is a *truth-enforcement operation*; second, it stresses that for scientific conservation, the integrity of the object fundamentally lies in its *physical* features and constituents. From the second assumption (the belief in scientific enquiry), there follows the idea that for a conservation technique to be fully acceptable, it should have been developed, approved, selected, performed and monitored according to scientific principles and methods, and specifically those emanated from hard, material sciences.

The first principle, the need to pursue truth, is common to all classical theories of conservation, and, as such, it has been discussed above. The other principles, however, require further explanation.

Material fetichism

On 6 September 1736, a fire destroyed part of a church in Carcaixent, Spain. The fire destroyed several parts of the building, such as the choir and the organ, as well as many ornaments and pieces of furniture. A small marble statue of the Virgin and the Child, which had been borrowed from a nearby convent to conduct some special prayers, was also destroyed. The image was said to have been found buried by a farmer in 1250, and it was the object of great devotion. The day after the fire, some fragments of the Virgin's statue were identified among the ashes and rubble, much to the joy of the people of the village. Some of these fragments appeared to be from the heads of the Virgin and the Child, and a special commission was created to confirm their identification. On 5th October, the mayor commissioned a new statue. A contemporary document describes the process of its production:

> En el día 31 de octubre del mismo año 1736, víspera de Todos Santos, el dicho señor Cura, acompañado de su Alcalde, dos regidores, el Escribano y el Síndico del Convento de Aguas Vivas con algunas velas encendidas, trajo los fragmentos en una cajita a casa de la viuda de Pedro Talens, los cuales se pusieron en un hornico que había prevenido en la cocina; y puesta su cubierta, se cubrió todo de lodo para molerlos (...); quedando de vela toda la noche sin salir de la cocina el Sindico del Convento de Aguas Vivas y Fr. José Gisbert del mismo Convento (...).
>
> En el día siguiente se empezaron a moler los fragmentos y darse principio a la fábrica de la Sagrada Imagen de Nuestra Señora de Aguas Vivas por dichos artífices: el Hermano Jesuita Paradís y Andrés Robres; el Hermano componiendo las aguas para arrojar los polvos de los fragmentos, y el escultor Robres fabricando la Santa Imagen, en la cual vació el pecho y puso dentro de él la cabecita del Niño que pareció no molerla, y la cabeza de la Virgen que tampoco quedó molida, se colocó en la parte que corresponde a las rodillas de la Imagen, y los polvos raidos, negros y quemados se incorporaron a la peana de la Virgen (...).

> [On October 31, 1736, just before All Saints' Day, the aforementioned Priest, along with the Mayor, two city officials, the Notary and the Aguas Vivas Convent Administrator, holding lit candles, brought the fragments in a box to the home of Pedro Talens' widow, and put them into a little furnace that had been prepared in the kitchen; and with the lid on, all the fragments were covered with mud in order to crush them (...); the Aguas Vivas convent administrator and Brother José Gisbert, from that same convent, stayed awake all night, without leaving the kitchen (...).
>
> The next day, the fragments were crushed and the new figure of Our Lady of Aguas Vivas was begun by the aforementioned artisans: Jesuit brother Paradís and Andrés Robres; the brother prepared the water in which to drop in the dust from the fragments, and the sculptor Robres made the figure, and hollowed out its chest to put the small head of the Child, which he did not crush, inside. The head of the Virgin, which he had not crushed either, was put in the part of statue representing the knees, and the burnt, worn-out dust was put in the base of the figure (...)]

This newly made gypsum image has survived to this day, though a wooden base has been added. In 2003, some studies were carried out in order to assess its conservation state. Computerized axial tomography showed that the 1736 document was entirely true, and that in order to preserve the special power of the original statue, remnants of the precedent, Gothic image were incorporated into the new image. Furthermore, the original base was actually preserved inside the new, wooden base, which was hollow (Guerola, 2003).

This story might seem curious to twenty-first century readers. The notion that the original material may have some special power, even if that material is actually not perceivable by spectators in any way, might provoke a slight, benevolent smile, even if we are aware that it took place 300 years ago. However, this attitude is not that different from the attitude that pervades some contemporary notions that are still rooted in many people. As a matter of fact, many people are ready to travel long distances and wait in long

lines in the sun or rain just to *see* some *authentic* objects – even if the difference with a replica is impossible for them to distinguish. Tusquets has gone a bit further, arguing that in many cases a replica may offer a more complete experience than the authentic one. After considering several cases, such as the *moulages* in the École des Beaux Arts in Paris, the reproduction of the Altamira cave, the *Museo de Calcos* in Buenos Aires, or Leo von Klenze's copy of the Parthenon, the *Walhalla*, Tusquets asks:

> ... ¿no apreciaría más el talento de Leonardo contemplando tranquilamente una buenísima reproducción de la Gioconda, del tamaño real, sin cristal, acabada con un ligero barniz, como lo estuvo el original, que en el Louvre, a empellones, atisbando la pintura original tras varias capas de vidrios antibala que reflejan el grupo [de turistas] que no cesan de disparar sus flashes, aunque esté prohibido?. (Tusquets, 1998)
>
> [... wouldn't I better appreciate Leonardo's genius by leisurely contemplating a very good life-size copy of the Gioconda, with no protective glass, which is lightly varnished, as the original was, than being in the Louvre, pushed back and forth, hardly discerning the original behind several layers of bullet-proof glass that vividly reflect the group [of tourists] who unceasingly shoot their flashes even though it is forbidden?]

Certainly that is true; but the fact is that most people still prefer to view the original object than a copy, regardless of its quality. It is not aesthetic enjoyment what is expected, but a different experience. The fact is that for many people, the *authentic* material has a numinous quality (perhaps the 'aura' described by Walter Benjamin) that renders it very powerful in comparison with replicas or virtual experiences – an attitude which is not very far from that seen in the case of the Carcaixent Virgin: both this statue in the eighteenth century and many artworks in the twenty-first century are regarded as *relics*:

> Why, if what we value from a work of art is the aesthetic pleasure to be gained from it, is a successfully deceptive fake inferior to the real thing? What most of us suspect, that aesthetic appreciation is not the only motor of the art market, becomes evident when a work of art is revealed as a fake. When a 'Monet' turns out not to be, it may not change its appearance, but it loses its value as a relic. (Jones, 1992)

This special, often irrational appreciation for the *material* components of an object is what confers it with a strong, unique value. Just as the eighteenth-century makers of the new sculpture in Carcaixent tried to keep as many original fragments, many people still make painful efforts for this same purpose today. A dramatic example of this took place in Assisi, Italy, on 26 September 1997.

At 2:33 a.m. on that day, an earthquake shook some regions of the Italian peninsula. Among many other consequences, it damaged the well-known Cimabue's mural paintings in the vault of the San Francesco basilica, producing some alarming cracks, and making fragments of the decoration fall apart and break into tiny pieces on the floor. Sergio Fusetti, who had worked for years in the conservation of the basilica, arrived at the building at around 3:00 a.m. By 6:00 a.m., he had gathered some 600 of the small pieces that resulted from the fragments of plaster decoration falling down and splitting into many smaller pieces. Later, other experts arrived to examine the damage. Then, some 20 minutes before noon, a small but noticeable rumble shook the basilica. Some fragments from the paintings in the ceiling fell down, which, as Fusetti recalls, looked like gold dust because of the intense sunlight entering the basilica through the fully open doors. And almost immediately, at 11:43 a.m., a much stronger tremor surprised everyone, causing a tragedy. Large parts of the ceiling fell down, crushing four people to death. Fusetti himself was lucky, as he survived with only some broken ribs.

Fusetti's previous efforts in collecting those 600 pieces was well intended, but later, when the havoc caused by the earthquake disappeared, it became clear that it would be insufficient. The

restoration team gathered more than 100 000 minute fragments from the ceiling, which had resulted from plaster and bricks hitting the floor after a 20-m fall. Trying to collect as many of these pieces as possible became a prime concern, and even computer and image analysis experts took part in ensuring that as many of those tiny pieces of the original painting as possible could be put back in place, more than 20 m above the spectators' heads. There, it is completely impossible to discern the fragments. Even before the earthquake 'merely a blur of colour' could be seen by the many pilgrims, churchgoers and art lovers who visited the basilica (Leech, 1999).

There are close similarities between the case of the Carcaixent statue and that of the Cimabue's Assisi paintings. In both the cases, a valuable object was suddenly destroyed, and, in both the cases, its material components were considered valuable or potent all by themselves. The fragments of the Carcaixent Virgin were invisible for churchgoers and visitors, as are many of the fragments of the Assisi paintings, but nevertheless some special efforts were made to preserve them. In both the cases, the result of those efforts is unnoticeable: the observer is assured that the fragments are there, and it is that *belief* what renders the effort worthwhile. The lesson here is that placing value upon the material components of an object is neither a modern nor a scientifically grounded attitude. Rather, the opposite is true: this *belief*, which Petzet aptly called 'material fetichism' (Stovel, 1996), is what provides support for modern scientific attitudes in conservation.

It is because of this material fetichism that, for most Western people, the conservation of the material components of an object is a worthwhile endeavour, even when it is physically unnoticeable. Physical stimuli provided by replicas or reproductions may be objectively similar to those provided by the original object, but they are not perceived as being as intense and complete as those provided by *real* objects, or, to be precise, by objects whose

material components are the original ones. This recognition plays an important role in the implicit scientific theory of conservation that emerged between 1930 and 1950, as it mandates that conservation should avoid, as much as possible, the elimination, alteration or concealment of original materials. This precludes the removal of original fragments and the hiding of original materials. On the other hand, this principle does encourage the removal of 'non-original' materials, such as yellowing varnishes on paintings or corrosion crusts on metal pieces.

Belief in scientific enquiry

The other principle of scientific conservation (the belief in scientific enquiry) is harder to explain, due to the fact that science has not been well defined and that it is a very widespread belief. Most people would be unable to offer a minimally coherent definition of what science is, but the fact is that a basic trust in what is commonly called science exists among most people in Western cultures. Hence, instead of trying to describe or discuss the principles of scientific knowledge (a task that would take far more effort and time than is worthwhile here), it may suffice to stress that science is nowadays a preferred way of gaining knowledge, and that it has almost completely displaced other ways, such as artistic or religious ones (Wagensberg, 1985).

There is, however, a very important feature of scientific knowledge that deserves special mention: objectivity. Scientific knowledge is not supposed to be related to the subject performing the enquiry, but rather to the object itself. It is not based upon subjective feelings or impressions, but upon hard facts, precise measurements and repeatable experiments developed under controlled conditions. This kind of knowledge is thought to be superior to subjective knowledge, because it is not subject dependent, and is, therefore, of nearly universal validity, as it is not contaminated by

the personal biases, preferences or beliefs of the observer – or of anyone discussing its findings.

Objectivity is thus a prime advantage of scientific knowledge, which explains its pre-eminence. Admittedly, the grounds for that pre-eminence have been contended by philosophers as different as Goodman (1965), Feyerabend (1975, 1979), or Lyotard (1979), but these reflections have not gone beyond the philosophers' domain, or, at best, the hi-cult domain. Indeed, they are far from pervading society at large, perhaps because the notion that science actually is, to use Chomsky's or Hachet's expressions, a 'necessary illusion' or a '*mensonge indispensable*' (Chomsky, 1989; Hachet, 1999). In 1932, the President of the British Association for the Advancement of Science thought that 'science is perhaps the clearest revelation of God in our Age' (Clavir, 2002); nowadays, little has changed, as science remains the clearest revelation of truth for many people.

The pragmatic argument

Just as in the case of material fetichism, the belief in scientific knowledge may be a matter of faith for many people. Then again, this faith may be based upon the achievements of science-based technologies, just as other faiths have been based on the miracles and wonders they could produce or upon the emotional relief they could confer believers with (Burke and Ornstein, 1995; Noble, 1997). Medical treatments, communications, transports and many other aspects of everyday life have experienced a significant improvement that is based upon scientific knowledge, and this constitutes a good reason why science, or perhaps *technoscience*, should be trusted. Likewise, scientific conservation also relies on this same important argument, which is of a different nature from those described by Clavir: it is not strictly epistemological or theoretical, but rather a *pragmatic* argument. Scientific conservation

is thought to be a better form of conservation simply because it produces results which are superior to those offered by non-scientific conservation; the results are more reversible, more efficient, longer lasting, truer, more objective and less controversial. Technical analysis allows for the detection of non-original parts; accelerated-aging tests predict the decay of original and conservation materials; chemistry allows the understanding of deterioration processes and helps in their prevention, etc. Science has developed a number of complex, valuable methods, techniques and tools, and their use has led conservation to new levels of excellence. As a consequence, new techniques have been developed, new standards have been set and objective, scientific knowledge has substituted subjective judgement.

These assumptions underlie the whole set of principles behind objective, scientific conservation and perhaps constitute another reason why so little effort has been made in elaborating a theoretical reflection upon it: facts, hard facts, speak of and by themselves, so that no other reflection appears to be necessary. As such, the pragmatic argument complements scientific conservation's 'material theory' described above, which could then be relabelled as a 'material and pragmatic theory of conservation'. In a certain sense, this is an oxymoron, since, strictly speaking, no 'pragmatic theory' can exist. However, this expression accentuates the idea that the superiority of scientific conservation is based not only on a solid theoretical reflection upon the qualities and purposes of conservation objects and methods, but also on its sheer, objective results.

Summing up

Scientific conservation is a form of conservation that gained wide acceptance in the latter part of the twentieth century. It is based upon the pre-eminence of objectivity, and as a consequence

it emphasizes scientific forms of knowledge at all stages of the conservation process.

Scientific conservation lacks a written, theoretical body that precedes or avails it. However, it is unavoidably based upon strong, implicit principles, which constitute what could be called a *material theory of conservation*. These principles can be summarized as follows:

1. Conservation should attempt to preserve or restore the *true nature* of objects. This is its most important principle, which is common to all classical theories of conservation.
2. An object's *true nature* relies mainly upon its material constituents (material fetichism).
3. The techniques and target state of the conservation process should be determined by scientific means. Conservation techniques should be developed, approved, selected, performed and monitored in accordance with scientific principles and methods, and particularly in accordance with those emanated from the hard, material sciences. Subjective impressions, tastes or preferences should be avoided; instead, decisions should be based upon objective facts and hard data.
4. Scientific conservation methods and techniques actually produce results that are objectively better than those provided by traditional, non-scientific techniques.

Chapter 4

The decline of truth and objectivity

This chapter elaborates on the criticisms of classical conservation theories and on their most important occurrence at the beginning of the twenty-first century: that is, scientific conservation. These criticisms are based mainly upon the analysis of the notions of objectivity and truth in conservation and rely upon two core arguments: the first argument is based upon the problems found when the notion of authenticity and its role within the conservation ideological framework is carefully examined. The second argument stresses the relevance of subjective, personal tastes, biases and needs when it comes to conservation decision-making.

The tautological argument: authenticity and truth in conservation objects

For classical theories, conservation is a 'truth-enforcement' operation. It can be safely said that the goal of conservation is to reveal and preserve an object's true nature or true condition.

This notion is very widespread and is present in an overwhelming number of cases. It is very frequent to read or hear that a restoration 'has revealed an object's true condition'. In Spanish it is often said that a conservation process *nos ha devuelto* ('has given us back') the authentic object, while in Italian it is very common to