

ENGLISH VERSION

Alfredo Pérez de Armiñán

EUROPA NOSTRA / EUROPEAN UNION AWARDS FOR CULTURAL HERITAGE AND THEIR IMPORTANCE

Since 1978, the Europa Nostra Awards of the European Union for works performed in Spain have been an important cultural event. In the first place, for Hispania Nostra, which co-operates in the organisation, but no less for all those who strive to conserve, restore, refurbish, manage and promote the cultural heritage of Spain.

Of the Spanish works presented at each edition, which are more and more numerous each year –forty-seven in 2003– the merit of only a few is acknowledged. However, although the competitors are aware beforehand that it is very difficult to win, because of the small number of awards granted each year, they also know that the fact that so many enter the competition is a token of the abundance, variety and quality of both public and private works carried out in Spain in the field of restoration and refurbishment of monuments and scientific studies and master plans concerning architectonic heritage. Thus each edition of the Europa Nostra Awards is a precise indication of the activity in this sphere in Spain, and this in itself is one of its greatest achievements. The solemn award-giving ceremony for Spanish projects and works in the last three editions, 2001, 2002 and 2003, took place under the presidency of Her Majesty Queen Sofía, Honorary President of Hispania Nostra, held at the Palacio Real del Pardo last June. A few days earlier, the ceremony proclaiming the recipients of the awards in all European countries in the 2003 edition had been held in Munich, under the presidency of His Royal highness Prince Henry of Denmark, President of Europa Nostra. At that ceremony, it was announced that a medal of honour and six diplomas had been granted to Spanish projects, some of which are analysed in detail in this issue of *Loggia*, published under the auspices of Hispania Nostra.

However, the importance of these prizes transcends the acknowledgement by the different juries of the scientific, technical

or aesthetic merit of the winning projects and works. Their main value resides in the constant encouragement they provide to perform exemplary interventions, which will provide guidelines for many others in a field like cultural heritage, where, unfortunately, there is more confusion than clarity nowadays regarding the criteria for intervention, the methods used and, worse still, the objectives to be achieved.

In the opinion of Hispania Nostra, there is a great risk all over Europe of trivialising or exploiting the real deep historical and sometimes artistic meaning of the assets that constitute our heritage, above all when dealing with important monuments and historical buildings.

Spain is no exception. For that reason, it is worth rigorously re-formulating the current conditions of the development of cultural tourism as a phenomenon of growing social and economic importance. The aim would be to produce authentic, lasting cultural gratification based on solid information and education that would become lodged in people's memory rather than mere passing entertainment, which requires constant renewal and change. We must not forget that the real value of the assets that constitute our cultural heritage resides in the fact that they are a testimony of human memory, based on how they were created and how the generations that went before us saw and mentally and emotionally recreated them. Knowledge of the history of monuments, cities, artworks, the testimonies of civilisation, not to be confused with the aesthetic pleasure they arouse in us, is therefore essential in order to conserve and use them properly.

A great thinker of the 20th century, unjustly almost forgotten today, the Germano-Italian Romano Guardini, summed up the essential content of the modern notion of Cultural Heritage when he said, "The destruction of an old work of culture is a crucial loss. Such a work is the expression and the life ambience of 'human' man and cannot be produced by those who came afterwards... this man needs the old works and forms. They bring back to him the memory of himself. They help him to reach himself. If they are spoiled, it not only means the loss of an aesthetic or ancient resource, but an existential loss."

The Europa Nostra / European Union Awards for Cultural Heritage strive, then, to preserve old works of our culture, and integrate them, while keeping their essential values intact, in the life of the successive generations. This is their main importance, as an expression of the principles of protecting the cultural legacy of our past, which today constitute a fundamental part of a civilised view of the world, aware of the possibilities of human beings but also of their limitations and obligations.



Marco Dezzi Bardeschi

CONSERVATION, NOT RESTORATION. HUGO, RUSKIN, BOITO, DEHIO ET AL. A BRIEF HISTORY & CONSERVATION SUGGESTIONS FOR THE NEW MILLENNIUM

This article proposes a new, condensed examination of International Restoration Charters from the point of view of Italy's contribution to the disciplines that have countered the unjustifiable correctness of so-called "restoration" practices with the alternative of a virtuous practice based on respect and care for the monument/document. Camilo Boito's motto "Conservation, not restoration" goes a step further in the radical European line anticipated by Victor Hugo ("Guerre aux démolisseurs", 1825-1832), John Ruskin ("so-called 'restoration' is the lowest form of destruction accompanied by a false description of the object destroyed", 1849) and William Morris's Anti-Restoration Movement crusade (from 1877 onwards). It is a motto taken over and invoked over a century ago by Georg Gottfried Dehio ("Conservieren, nicht Restaurieren", 1901) and value protection theory of Alois Riegl ("Denkmalkultus", 1905) and his disciples (Max Dvorak, Clemens), still valid today. This essay takes a special look at the first Italian Charter (Boito, 1883), the Athens Charter (1931) and the text by Gustavo Giovanonni (1931), an absolute must to understand the evolution of the restoration debate until the Venice Charter (Robert Pane, Ignazio Gazzola, 1964).

A rereading of the discipline in Italy is extremely suggestive, if we examine it carefully: 1) The ICOMOS-IFLA Florence

Charter (1981) with the Italian alternative version of historic gardens; 2) the Declaration of Amsterdam (1975) and the great restorations of European cities with the Neapolitan school's insistent allusion to integrated conservation (Francesco Forte, Roberto Di Stefano); 3) the open declinations of the notion of "authenticity" (material or formal) underlying the Nara Document (Lemaire, 1994); 4) the objectives (and the subsequent putting into practice) justified by the Burra Charter (1979, 1999) or the Cracow Charter (2000). It is very apt that the debate raised by ICOMOS about the reasons (and methods) of CONSERVATION should delve into these and other essential matters, crucial for the future and urgent renovation of the discipline.

1. The rejection by conservationists of the deceit involved in so-called "restoration". The long, meandering road in defence of the liberation (and ensuing autonomy) of CONSERVATION from the overwhelming spiral that represents the carefree rebuilding typical of the discipline of RESTORATION starts in Italy precisely with the discovery of the betrayal of the latter's expectations and the need to guarantee respect and protection of the material document (as opposed to the loss of identity and irreversible falsification). For some time now, as we know, the material document is the essential, fundamental point of a discipline whose field of action is precisely the safeguard of an ASSET recognised as the inalienable HERITAGE of everyone (monument, single building, block, city, territory), a RECOURSE we believe should be handed down to future generations in all its unique testimonial richness. For some time I said, because the demand or lesson in this sense transmitted to us by great masters of European civil thinking like Victor Hugo, John Ruskin or William Morris already constitutes (or should constitute) common heritage and at the same time an unrelinquishable cultural and ethical referent. And, as we shall see if we reread the most significant points in the evolution of the debate, especially so in Italy. The deceit of restoration is already present in Carlo Cattaneo's contribution "about the restoration of some buildings in Milan" in the first issue of his multifarious magazine *Politecnico*: "so that restoration," he writes

at the beginning, "will not be turned into an object of desolation or extermination". This was in 1839 and we can already anticipate, after reading the battle against vandalistic restorers waged by Victor Hugo in 1825, the solemn denouncement formulated by the neophyte Ruskin ten years later (1849) in his *Seven Lamps of Architecture*: "So-called restoration is the worst form of destruction, accompanied by a false description of the object destroyed." And from that time forward, everyone who has wished to join the ranks of those who cry out against the perverse effects of the discipline will dismissively use the expression in inverted commas (so-called "restoration").

From Restoration to Conservation: The Sensitive Thermometer of Quatremère de Quincy

If we wish to gather testimonies in favour of conservation (and against restoration), it might be useful to go back to the first half of the Age of Enlightenment in Italy. In 1728, Jonathan Richardson spoke out against Maratta's unfortunate interventions on Raphael's frescoes, because "instead of restoring the work of Raphael, faded with the passage of time, he did it more damage than time has done or could ever have done", and criticised those gaudy colours "that hit one in the eye". And he was soon followed by Mr Bottari, who assured, in 1730, that the work "has lost a great deal with the renovation"; and then by an exacting traveller like President De Brosse (1739), who said, "the colour is very poor, reddish and all wrong". Therefore protests about the absurdities of restoration began with the criticism of interventions on the work of important painters (1753: William Hogarth, on behalf of all the critics, alleges that it is absolutely impossible to "recuperate" the original colours), but, thanks to the cultivated and refined lesson imparted by the mundane, cosmopolitan intellectual that was Count Francesco Algarotti, this opinion is expanded to include architects, with the discovery of the ageing of materials and the added value placed on the skin of an artwork by the effects of time. Rather than a shameful sign of decadence and degradation (which should therefore be eliminated), Algarotti –long before Ruskin– considered the

"patina" to be a really "precious" quality, a sign of the value of the antiquity and authenticity of the work, the result of the action of that "venerable old gentleman called Time, who works on it with very fine brushes at an incredibly slow pace" and who, "mixing the colours imperceptibly, makes them more muted and delicate". And in 1756, Luigi Crespi, the abbot from Bologna, precisely in two of his letters to Algarotti, actually speaks out for the virtuous theory of non intervention without making any fuss about it: to avoid the havoc wreaked by "restorations" of paintings, it is preferable to observe "intact the little that remains pure and immaculate rather than enjoy the discordance produced by retouching." To content oneself, as Vasari suggested, with preserving the work "from the abuse of time (when it is feasible) or the weathering of the seasons [...], frost in winter, too much heat in summer" and prevent "damp from oozing from the walls and vaults", that is, effectively to avoid the causes of possible decay, watch over it carefully and, at the end of the day, appreciate "things created by excellent men," in Crespi's words, "better half faded than touched up by someone less knowledgeable". With this we have come, at least as far as pictorial documents are concerned (paintings, decoration or frescoes), to an awareness of the respect due to the material authenticity of an autographed document. The evolution of over half a century's debate about the discipline in the transition from the Old Regime to the Restoration can clearly be seen –in spite of the assertive tone of the vocabulary– even in the meaning of the very word "restoration" in Quatremère de Quincy's *Dictionnaire d'Architecture* (published in France in 1832, and translated into Italian later, about mid century). At the beginning, the author, appointed perpetual secretary of the Academy in 1816, a staunch classicist and defender of ideal beauty, does not seem to harbour the slightest doubt: restoring is, to him, according to the tradition of dictionaries (see for example the word in Filippo Baldinucci's "Vocabulary"), "remaking in an object the parts that are damaged or missing either because of age or some other accident". And considering that "architecture is made up necessarily in

its works of similar parts that, by means of precise observance of the measurements, can be copied or reproduced in an identical manner, there is no room for inventiveness in an operation of this sort, since it can be reduced to a simple mechanism". However, in successive editions and additions to this term, it is not difficult to note a perceptible semantic shift from the thesis of mechanical remaking to the opposite one of total respect for the monument. Thus, after affirming the diffusion of the new "mania generated by the supposedly picturesque system of irregular language", with the effect that "from that time forward, any refurbishment project of an old monument in ruins has met with the disapproval of the followers of the picturesque". In the first place, Quatremère de Quincy believes "that a compromise can be made" that contemplates respect "for old buildings more or less in ruins" and "not restoring the remains" and, in the second place, guarantees that a clear distinction be made between the existing parts and the new additions. "Details can be succinctly eliminated so that the spectator can distinguish between the old work and the part added to complete the ensemble". For him exemplary restoration would be Valladier's contemporary intervention on the Arch of Titus in Rome (1821), where, in order to make it easier to read, the added parts are made of Travertino marble instead of the original kind. And at the end he even goes so far as to suggest the magnificent practice of the slightest possible preventive intervention, in a passage that was immediately appropriated by Ruskin: "A mere prop would often be enough to ensure (the monument) many more years' subsistence".

Restoration in Italy before Unity: Martelli & Cattaneo

Meantime, however, the heated protest against Victor Hugo's restorations and restorers in a mass medium like *Notre Dame de Paris* made a strong impact on public awareness. And in Italy, among the first to defend the thesis of an intervention that respected the physico-matteric testimonial datum, as early as the nineteen thirties we find a cultured architect like Giuseppe Martelli in Florence and a staunch Europeist and militant critic like Carlo Cattaneo in Milan.

The former faced the destiny of the old symbol of freedom of the republican City Hall sculpted by Marzocco. What should be done? Should it be conserved where it stood in the square, at the foot of the Palazzo Vecchio, in its historic materiality in spite of the lamentable state it was in from the aggressions of time or should it be replaced with a copy to avoid its being lost forever? Finally, they decided to conserve the original in the museum and to substitute a copy in a more weather-resistant material like bronze. The latter defended the need for change:

"Architecture should not be limited to imagining new works or beginning them but should even know how to complete them and conserve them with timely restoration works". Cattaneo had a clear idea of how to make a distinction (which Boito echoed) between conserving and creating "new works": "in a land like Italy [...] that has the multiform mark of the passage of the centuries in its buildings, the conservation of monuments becomes an all the more necessary art as cultivated Europe's study and respect for our ancient buildings in comparison with modern ones increases". The echoes of Victor Hugo's "Guerre aux demolisseurs" (1825, 1832) and the recently created Conservators Commissions are very much present "at a time when all of cultivated Europe cries out against the restoring vandals and in France and Germany societies and committees have been set up to protect monuments... [...]". Cattaneo warns against destructive interventions, against "restoration or its complement not becoming an object of devastation and extermination". And yet he ends up trapped in the web of an indefinable spirit of the time and place. And when he should express the objective (what and therefore how to conserve?), he refers to an all too vague and ambiguous "personal and native" notion of a monument so as not to arouse hackneyed temptations to return to one's origins. Thus, after singing the praise of the layers of time (the "multiform mark of the passage of the centuries"), instead of aligning himself to safeguard specifically the material document as a whole, we see him slide towards the venture of re-establishing the original configuration (medieval was the

favourite, obviously) and speak up for the selection of stylistic adaptation, appreciating, for example, the work of people like Pizzigalli in the Carmine church in Milan, who "demolished the exuberant cornucopias added in the Baroque period to restore the original parts of this beautiful Gothic work". This solution was also favoured for San Simpliciano, where he proposed to "complete the temple harmoniously with a beautiful gallery in the same style" rather than inserting "a scholastic mass of marble and bronze fashioned in modern style". In spite of many witty remarks (the same precocious attention to the patina, defined as "venerable opacity" deposited by time), many of the contradictions still persist, although all the disciplinary issues are under discussion. How can we identify the genetic law of the characteristic features of the "type" and the "model" based on the important distinction between both notions already put into words by Quatremère de Quincy? What is the monument's sphere of influence, its aura? How should one behave towards the *superfetations* (a term first used, I believe, by Cattaneo) or towards additions declared non organic, incongruent and, in any case, unsought for?

But it is above all at the level of the precocious awareness of the unity of inherited urban stratification (and the consequential need for its absolute protection) that Cattaneo's contribution is valuable, like in that beautiful intuition about the Piazza del Duomo, where we see him repeat (Victor Hugo's) comparison of the city with a book: "if any part of that architectonic combination fortuitously created over the centuries were removed, would it not be like taking a syllable away from a word or a string from a harpsichord?" For this reason, in spite of his many contradictions, Cattaneo's contribution to a conservative disciplinary stance is fundamental and its legitimacy is acknowledged all over Europe although its character will differ depending on the nation.

The First Europeans to Defend the Culture of Respect and Protection after Victor Hugo: Merimée, Ruskin and the S.P.A.B.

The incipient debate in Europe is known to have been polarised between the two opposite lines of thought inaugurated, on the

one hand, by Viollet-le-Duc (publicised in Italy by Pietro Selvatico Estence particularly) and, on the other, by Victor Hugo and John Ruskin. It is the year 1840 and in France the first state run body for the protection of architectural heritage has just seen the light. Prosper Mérimée, together with Ludovico Vitet, behind the first campaigns regarding the restoration of national monuments, again speaks out in favour of the respect that should be shown to the monument. "It cannot be too often repeated that, as regards restoration, the first, inflexible principle consists of not innovating, even though this innovation may arise out of an admirable desire to complete or enhance: it is wiser to leave what is incomplete or imperfect incomplete or imperfect. It is not necessary to correct irregularities or rectify deviations, because deviations, irregularities and defects in symmetry are historical facts of great interest that often provide archaeological criteria to determine a period, a school, a symbolic idea." And to conclude, he coins a healthy motto. Restoration? "Neither additions nor demolitions." And in this line, he paves the way for a very promising young architect: Eugène-Emmanuel Viollet-le-Duc. But since his first interventions, the latter's ardent passion for medieval monuments develops a positivist project of rational knowledge (he is a disciple of Comte's) during the restoration works with exuberant reinventions and morphological and stylistic re-writing of the building. Victor Hugo's serious recriminations are soon forgotten and it is precisely the monument that symbolises his historical novel (*Notre Dame de Paris*, 1831) that first receives the stigmas of the strange new theory ("Restoring a building is not maintaining, repairing or rebuilding it but re-establishing in it a state of completion that may never have existed at a given moment": definition of "Restoration" in his *Dictionnaire raisonné de l'architecture française du XI^e au XVI^e siècle*, 1867). For Viollet, self-elected prophet of the newborn discipline, immediately hailed as a model for coming generations of interventionist architects, restoring is not conserving or even rebuilding "*com'era e dov'era*". It is

not a historico-philological operation but a re-projecting on conjectures of a potentially unitary and complete state, perhaps only imagined and never realised: we are at the moment of decline that has gone down in history with the name of "stylistic restoration".

On the other hand, precisely the surprising intolerance and arbitrary, negligent valuation generated by this theory arouse an increasing amount of reactions all over Europe, voiced no less by the Society for the Protection of Ancient Buildings (S.P.A.B.), an association founded in 1877 and particularly active in England and Italy, with the solicitous support of William Morris and his friends, to fight against the destructive character of "restoration". Its manifesto makes a crusade of repeating and publicising the thinking of Ruskin, its chairman and prophet, "We are convinced that these last fifty years' knowledge and attention have wreaked more havoc than the preceding centuries of revolution, violence and folly". In fact "the really strange idea of the restoration of ancient monuments arises in the mind of men, a very bizarre and obviously fatal idea whose very name implies that it is possible to strip this or any other part of history –that is to say, life– of fabric, etc."

And after a campaign criticising many "exemplary" cases, the century ends with W.B. Richmond's accusation in "The Impossibility of Restoration" (1891) in the Society's Annual Report, where he theorises, Ruskin-style, "Restoration is a falsehood. History cannot be brought back to life. No man can repeat the thoughts of another [...] Above all, believe you me, the 'restorer' does not exist." Which is tantamount to saying: it is pointless to create illusions; no retroactive action can be performed: the clock cannot be turned backwards. We can only act diligently and tempestuously to conserve with care the surviving architectural heritage, which still exists and speaks to us. But this is a task that requires exceptional technical and social commitment, a cultural challenge that is too much for the poor strength of an individual. The battle for the preservation and conservation of built heritage will only win the day if it becomes a collective sensitisation and action.

Camillo Boito and the Change Brought about in the First Italian Restoration Charter (1883)

It was thanks to the urgent act of denouncing so many unforeseeable excesses in monuments by the "English" members of the Antiscrape or Antirestoration Movement that a radical change was brought about in Italy. The prelude took place in 1882, when the minister Giuseppe Fiorelli sent the prefects and chairmen of Conservation Commissions a circular letter (21st July 1882, n° 683 bis), which contained the provisions for restoration "in order to avoid mistakes that are often made by making non essential reconstructions, which often show no respect for either the form or the substance of the old monument". The intentions were good but, as had happened with Cattaneo, the proposal was off-course. Instead of conserving the original state, it tends to describe and therefore support refurbishment of the lost original state that is defined as "normal": "confronting the normal state with the current one, point out the differences and the damage suffered, that is, the perversions, demolitions, additions, reconstructions, structural variations", inferring from them the works that must be performed, which will strive "to eliminate the differences between the current state and the normal one, in other words, recovering and maintaining as far as possible the normal state of all the parts that must be conserved".

Fiorelli, as a good archaeologist, invokes the opposite process, with the intention of reviewing the original project and building process: "These provisions must be applied while warning that, in order to acquire good knowledge of a monument, it is necessary to go back over all the work performed by the mind that created it". This muddled situation caused Camillo Boito to react on the occasion of the Fourth Congress of Engineers and Architects of Rome (January 1883), where he started the well-known debate about the character of additions that would lead him to draw up the first Italian restoration charter and immediately submit it for approval. "Should architectonic restorations," he asks, "particularly in the case of medieval monuments, imitate the style, form, work, aged materials in the parts to be completed

or added to, in such a way that the new work looks like the original or, on the contrary, is it better to clearly show the added or completed parts?"

This is a Copernican change from his early works (Santa Maria di Torcello in Venice or Porta Ticinese in Milan), where the greenhorn Boito is greatly influenced by Viollet's stylistic restoration and that of his direct and faithful Italian follower, Marquis Pietro Selvatico Estense (restoration project for the Gothic palace in Piacenza, the new facade of San Pietro in Trent). The excuse used to discredit stylistic adaptation (from new to old) is the matter of the character of the additions, which Boito forcefully distinguishes from the ambiguous model of stylistic submission, exalting its autonomy: restoration should be limited to a correct conservation of the existing work, whereas additions should follow the rules of the contemporary project. Admitting that the monument is a testimony open to the future (not subject to an inverted short-circuit towards an improbable past to be resuscitated), the intervention is reopened to dialectic confrontation between the varied contributions of different cultures and generations. Restoration must not lend itself any more to mutation, but must guarantee the permanence of the text to which it is applied: in short, it must be identified (and must conclude) in the conservation project. But, since in order to keep the monument-document alive it is necessary to ensure it is used with minimum consumption, it will be in the necessary addition that the new project is expressed as compatible with the existing object. "Additions or renovations must be made according to contemporary methods, making sure that the new work does not take away very much from the appearance of the old building."

The thesis of dialectic confrontation between the old and the modern was divulged, in the form of a dialogue between the author's two *alter egos*, the following year (1884) at the Congress of Engineers and Architects of Turin (where the architect Alfredo D'Andrade made a new "medieval" town in Valentino Castle), and the text was included in the collection of essays published under the title of "Practical Issues of Fine Arts" (Hoepli publishers 1894). At that time, Boito's

thinking, in spite of quite a few oscillations that remain unresolved in the "dialogue" text, is affirmed as the specific Italian restoration method. Its decisive fate derived from the fact that he treated (and respected) the monument as a document. Let us recall the start of the 1883 charter: "The monuments of the past are not only valuable for studying architecture but serve as essential documents to clarify and illustrate all parts of the history of times and peoples and should therefore be respected with religious fastidiousness, as documents where even a slight modification that may look like the original work can deceive and lead little by little to mistaken deductions".

And Boito uses Victor Hugo's (and Cattaneo's) metaphor: the monument is a book, a testimony made of stone. "I repeat your comparison," says one of the two protagonists to the other, clearly a Viollet disciple, "the monument is a book, which I want to read without abridgements, additions or manipulations; I want to feel sure that everything written there has come from the author's pen or style [...] and just as I would be happy to send forgers of old medals to forced labour, I would condemn forgers of an old building or part of it to rot."

Conclusion: "everything is therefore reduced to keeping the monument standing, ensuring it has a long life by means of the reinforcements suggested by science and practice; any other type of work becomes a *falsehood* on a public monument.

"One can affirm, in general, that a monument has its stratifications, just like the earth's crust," Boito continues, "and all of them, from the deepest to the most superficial, have their own value and deserve respect."

But if the monument is a book, it is a hand-written document that is open to the writing of future generations, a writing that does not eliminate the one that went before it but knows how to fit in between the written lines of the palimpsest. Here lies Boito's main merit, even among so many "strange contradictions" (the expression is his), in having restored a legitimate future to the monuments of the past that "restoration" wanted to invert in a short-circuit towards the distant time of their uncertain origins, reopening them to the need (and the quality) of new written contributions by the architects of the future.

In Boito's multifarious critical career, unfortunately always open to mediations and compromises with his possible opponents, there are at least two basic precepts that represent a qualitative step in the debate in favour of conservation, which the author himself does not hesitate to point out in a poem, whose translated version appears below:

"I must conserve in monuments
The picturesque and venerable;
Shunning additions and complements
As far as I am capable.
I must proceed in such a way
That the modern part is on display."

Riegl: The Theory of Values and the First Preservation Bill (1903-1905)

At the turn of the century the debate about restoration came to a head. In the *Denkmaltag* Congress in Dresden (1900), many art historians, such as Paul Tornow, still vigorously defended the thesis of repristination and style completion. Georg Dehio was against it, and invoked Boito's motto ("Konservieren, nicht Restaurieren", 1901), thus initiating a polemic against the authors of the mimetic reconstruction of Heidelberg Castle (Bodo Ebhard). And it is not surprising to find, a few years later, that a great pioneer and a protagonist of the Modern Movement like Hermann Muthesius echoed Boito and Dehio's motto. At European level, the great novelty in the new century is no doubt the preservation bill drawn up for the Austrian government by the art historian Alois Riegl in 1903 and which was unfortunately never put into practice, perhaps due to the author's untimely death (1905). It is a project based on an original idea about values (*Denkmalkultus*), which appear in eternal dialectic confrontation with each other. The decisions of the operator/restorer constitute the result of a conflict between opposing refutations: thus historical value tends to complete the text and energetically demands the reintegration of the missing parts or components, whereas the age value speaks out for non intervention and in favour of conservation. But the enemy of the good conservator is the novelty value to be found in the most tragic mimetic reconstructions, in detriment of the testimonial value of the original. Meanwhile the use value makes an

appearance, a value necessary to guarantee the monument's survival. An important contribution to Riegl's theory was later made by Max Dvorak, his direct disciple, in his text "Catechism" (1916), a veritable handbook for a good conservator.

And simultaneously in Italy the first *Soprintendencias* are created by the Commissions of Conservators, while Boito's presence, with reports and opinions appearing almost every day, is affirmed as crucial, especially because of his tireless mediation between opposing arguments and choices. So much so, that not a word of criticism can be found in his enormous production against the exuberant hypermedieval interventions by his friends and colleagues from so many Commissions (such as D'Andrade, Rubbiani and Sacconi). The good cause of conservation does not become as well established in Italy as it should have, in spite of Giacomo Boni's Ruskinian beginnings and Corrado Ricci's organising and proselytising skills (he was the first *Soprintendente* in Ravenna from 1909 and Director General of the Ministry from 1903). The latter waged the first battle (Riegl-style) in favour of tolerance and safeguarding the "diverse" (the Baroque decoration of San Vitale's dome in Ravenna).

Giovannoni: from the Athens Charter (12931) to the Instructions (1938)

The task of leading operative restoration decisions now passes on to a diligent young engineer-cum-architect Ministry inspector, Gustavo Giovannoni, whom Boito appointed his coryphaeus and sole heir after the Congress of the *Soprintendenza* Inspectors in Palermo in 1912 (Boito died two years later).

The document known as the Athens Charter and drawn up by the participants in the International Conference of Experts for the Preservation and Conservation of Monuments of Art and History (Athens, 21st-30th October, 1931), of whom Giovannoni was one, confirms the validity of the 1883 Italian Charter and, even in the words chosen for the declaration ("safeguard", "protection", "conservation" instead of the ambiguous "restoration"), constitutes an important disciplinary clarification. To begin with, it staunchly forbids repristination and conjectural

reconstructions and shifts the objective to the persistence of timely periodical maintenance works. "It confirms the predominance in the several states represented of a general tendency to abandon integral restitution to avoid risks by means of permanent regular maintenance to ensure conservation."

The other major points in the new charter consist of guaranteeing permanent use ("maintaining the occupation of monuments ensures their continuity") provided that in any case "the modern use should respect the historical and artistic character"; making sure public interest prevails ("it is a right of the community as opposed to private interests"); making sure the project is preceded by "a scrupulous investigation of the pathologies to be remedied" (hence the comparison between a good conservator and an attentive doctor); supporting in the consolidation a "judicious use" of all the resources afforded by modern technology (and materials) and "especially reinforced concrete", particularly "in cases where elements can be preserved *in situ*, avoiding the risks of destruction and reconstruction"; suggesting, in view of the new problem of urban contamination, the collaboration of "monument conservators" with technicians in physico-chemical disciplines, and the "removal of pieces from the context for which they were created" is considered totally unacceptable, particularly for exterior sculptures.

The motto now is to care for and divulge ("the best guarantee for the conservation of monuments and works of art must stem from people's affection and respect"); to this end, "educators must do their best to make children and teenagers used to refraining from any act that may degrade monuments" and increase their interest "in the protection of the testimony left by all civilisations". As we can see, the document is praiseworthy for its support of respect and care for architectural assets that form the community's common heritage and are of supranational interest, for whose safeguard, for the first time, the greatest determination and the mobilisation of international cooperation is invoked at all stages (from examination to intervention). As far as Italy is concerned, the Athens Charter is subjected to the preparation of a

more detailed set of regulations drawn up by the Superior Council for Antiquities and Fine Arts (still active since Giovannoni's time), which is published in the Art Bulletin (January 1932) in the form of "Rules for the Restoration of Monuments", in order to "enhance the unification of intervention methods and criteria".

The term "restoration" in the Treccani Encyclopaedia (Giovannoni, 1936: "the purpose of restoring monuments, whether to consolidate them by repairing the damage caused by the passage of time or to reestablish an active function for them, is an absolutely modern concept, parallel to the attitude of the thinking and culture that find arguments of respect and preservation in built artistic testimonies of the past, regardless of the period they belong to") and the ulterior Instructions sent to the *Soprintendenti* (1938) contribute to shift attention to the materiality of historic "testimonies" and, therefore, consolidation techniques of the building organism and physical conservation of materials. The problem of the restoration of a building starts with the manifestation of the first signs of structural deterioration and material degradation, accelerated by neglect or improper use. The novelty of these documents is clear to see: the main protagonists and the people scientifically in charge of the preservation work are now the technicians (the architect and the structure engineer, but also the material physicist and chemist) rather than the art historian (whereas in Boito's opinion, "the restorer should be an artist and an archaeologist"). In a word, from now on respect for the historic monument must prevail over the (always subjective, incidentally) aesthetic arguments proposed by the art historians who would like the replacement of the whole work. The great battle between the technico-scientific culture of engineer-cum-architects (like Giovannoni) and the formalist culture of art historians and critics (like Venturi, Toesca or Salmi), who were the authors of great visual encyclopaedias of the artistic manifestations of each era, where monuments are accredited by front views from the Alinari saga of photographers, as presumed suprahistoric icons frozen the year they were born and insensitive to the passage of time, now occupies the centre stage of the disciplinary debate.

And, in any case, after so much talk about preservation and conservation in Athens, it is easy to see how, afterwards, the same protagonists of the historic encounter, even evoking their conclusions, go straight back to practising an intolerant restoration method of substantial reinvention. In this sense, the case of Torres Balbás, appointed “conservator” of the Alhambra in Granada in 1923, is symptomatic. But also the case of Giovannoni himself, who, with the plans of municipal expansion, signs operations with great impact on the consolidated urban structure in Rome, seconding (with Munoz and other archaeologists) the fascist *esventramientos* for the expansion of the Forum made “on State orders” to articulate the Palazzo Venezia visually with the Coliseum at the cost of the via Alessandrina quarter and the historic agglomerate of Velia hill.

Italy: the 1939 Preservation Laws and the First Experiments in the Conservation of Matter

After legislative torture that had lasted over thirty years, on the eve of World War II, Italy finally managed to establish both two fundamental laws about the safeguard of monuments (1089/39) and natural beauty spots (1497/39) and the law of urban planning to put some order in urban development (1942).

Meanwhile in Florence a young engineer from the *Soprintendencia*, Piero Sanpaolesi, started to revise the old experiments in *silicatisation*, in other words, chemical treatment of stones, and carry out hardening tests (with fluosilicate of silicic, calcium and magnesium) on stone (the easily frozen *serena* stone, sandstone, marble), which he later applied to his first works in Tuscany (the lantern of Brunelleschi’s Old Sacristy in Florence, Donatello’s marble pulpit in Prato). The first collaborators in material treatment are born for the occasion. And in Rome the minister Bottai, who signed the two preservation laws at the request of some art historians (Argan, Bianchi Bandinelli, Lionello Venturi, Brandi), creates the Istituto Centrale per il Restauro (ICR), which actually started out as a clinic for the research and care of works of art (and was directed by Brandi for over thirty years). The crusade for the conservation of matter entered its phase of direct experimentation.

The second postwar Period: Vandals at Home and the Protection of the Landscape

The birth of the ICR also owed a lot to the contribution of Robert Pane, a young man trained in the sphere of Benedetto Croce’s culture who was not long becoming one of the most energetic representatives of the crusade for the protection of the landscape (against indiscriminate building in coastal areas in the peninsula of Sorrento and the villas on the Vesuvius). The years of Reconstruction and the development boom are also in fact the years of great environmental abuse. There was an attempt to confront restoration culture and the new urban planning culture (Olivetti, Astengo). Attention shifted more and more from isolated monuments to the context (with Giovannoni) of urban construction considered as a single unit to be safeguarded. In the early nineteen fifties, while the Neorealist cinema was drawing attention to obscure areas on the outskirts of the city, the problem of precarious marginal shanty towns on the limits of human survival came to the fore. The “national disgrace” of the Matera cave-dwellings was turned into a laboratory for urban planning policies, but the problem was not solved until the inhabitants were obliged to leave their shacks and move to new rural districts: the recuperation of the ghost town was delayed for at least fifty years and the expected success of the solution adopted is far from clear. In view of the growing pressure of land speculation that broke up the old weft of the city, Antonio Cederna’s campaign against “the vandals at home” (the title of one of his heated pamphlets) gave rise to a great polemic. The devastation did not so much affect monuments (which the “restorers” looked after) but the poorest, defenceless part of the historic city, whose character is not in its main monuments but in the complex context of streets and buildings, the organic articulation of the streets, houses, squares, gardens, the compact succession of styles and tastes, the continuity of “minor” architecture, which in each old city nucleus constitutes the tone, the necessary network, the connection element, the “lifestyle”, in a word. Cederna says that unfortunately “a great deal of the destruction threatening our cities can be attributed to art history

scholars: the history of architecture is still the prevailing study of monuments and individual personality [...] The results of aesthetic resonance that so enthusiastically taught the difference between poetry and non poetry, eliminating from the work of art everything that is not lyrical ecstasy.” It was in fact Pane, also in 1956, at the meeting of the Istituto Nazionale di Urbanistica (INU) in Turin, who, in a speech with a title worthy of Giovannoni (“Città antica, edilizia nuova”), addressed the question of whether “there is an unsurpassable incompatibility between old and new town planning”, as Brandi said. And he concludes, “This invoked intangibility represents a perfect absurdity”. The beauty of a city consists of “its value as an organism and not its extraordinary monuments” and both values are in constant evolution. Therefore “the atmosphere must be seen as a collective work to be saved as it is”, knowing, in any case, that urban scenes cannot be frozen to achieve an ahistoric physicalness. There can be no caesuras in historic continuum: the new architecture can cohabit with the old because that is the way it always has been: one relates to the other expressing the lifestyles of a society that evolves with temporal continuity. Boito’s point about additions is reformulated on urban and territorial scales: it is better “to create a good contrast (Pane’s words again) than a false imitation”. And even inside the historic centre of a city it is permissible “to replace an old building with a new one” as long as “the pre-existing relationship between masses and spaces” is not altered, that is to say, the existing height and volume must be respected. The confidence in the culture of the contemporary project is possible under these conditions, contrary to what Ernesto Nathan Rogers claims from the pages of *Casabella*, prognosticating for the new architecture the theory of the “acclimatisation to the pre-existing state” without special restrictive conditions (the star example being his Velasca Tower in Milan).

Countermand: One Step Backwards

At the moment when the disciplinary pointer is visibly inclined towards conservation (and there are more and more testimonies in favour of the legitimacy and autonomy of a new building standing side by side with the old), Italian history goes back a step because

of the theoretical contribution of several subjects that slow down disciplinary clarification. Here are some of them:

- *Soprintendente* Alfredo Barbacci's "official text" (printed by the *Poligrafico dello Stato* in 1956) about restoration history and theory
- The term "restoration" in the Universal Art Encyclopaedia written by Renato Bonelli and Cesare Brandi and the latter's "Theory of Restoration" (both dated 1963)
- The good fortune of the theory of Typological Restoration that ensures the forced success of Muratori's "Studies for an Operative Urban History" about Venice, in the first place, and later about Rome.

In spite of showing an unsuspected chamber of historical horrors (with the proposal of comparing pictures of "before" and "after" intervention), Barbacci calmly redirects the discipline towards Baldinucci's or Quatremère's definition (restoration is "any operation carried out on a monument to conserve, reintegrate or integrate it to its proper form, that is, the form intended by its author or authors") and re-propose awkward category binomials, justifying "recomposition, liberation, reintegration, integration or reconstruction or completion" restoration works.

Considering the pulpit from which the sermon is delivered, this stirs up great confusion among the parishioners.

As far as Brandi is concerned, his training as an art historian caused him to draw up a restoration theory directly modelled on the (idealist) theory of the artwork. Hence his special insistence on the "indivisible link between restoration and aesthetic and, particularly, the prevalence of the aesthetic aspect over the historic". Bonelli echoes this and, in his new vision of the "progressive" history of the coming of age of the discipline (going from Viollet's "stylistic" restoration to a "historic", "philological" or "scientific" kind), exalts contemporary restoration as a "critical process and creative act" (the echoes of Gentile can clearly be seen). The closeness to the *Reine Sichtbarkeit* movement is immediate. The aesthetic perception is given clear (almost exclusive) priority: when the artistic image is dimmed or "interrupted by destruction or visible obstructions, the critical process is obliged

to resort to fantasy (!) to refashion the missing parts or reproduce the concealed ones and finally discover the complete unity of the work".

This point is the very antithesis of conservation: the aim of restoration is to reintegrate the complete image of the work, reestablish the supposedly original expressive *lectio*. If Bonelli theorises about "critical restoration" (which is totally submitted to subjective interpretation and therefore criticises also the conservation of the historic status of the text to be manipulated), in a substantial agreement Brandi directs the restorer's intervention towards the "reintegration of the image" (title of an essay of tribute by the young Giovanni Carbonara to his master in 1978). "Restoration," writes Brandi in his "Theory", and pay close attention to the terms he uses, "should seek the reestablishment of the potential formal unity of the work of art, as long as this is possible without pronouncing an artistic falsehood or a historical falsehood and without eliminating any sign of the passage of the artwork in time". It is clear that this is an obvious paradox, as it is impossible to reestablish the original formal (albeit potential!) unity while respecting the traces of the hand of man and of time.

In Muratori's studies about the process of the historic formation of the city, in the "civic type" we can identify the characterising (and so far unknown) key to assuming even as an "a priori synthesis", an expression of society's "constructional spirit" and a reflection of "formal and collective intuition": the architect is identified then with "the one who finds, discovers, underneath the multiple forms, the first form, the not historic but substantial origin". The analyst becomes a judge. The first municipal promoters of the urban recuperation of Bologna, Brescia, Gubbio and Vicenza like the method. But above all the spirit of the geometry of the Roman *castrum* in Como attracts the typologists' attention: in 1968 Caniggia, a disciple of Muratori's, is commissioned by the City Council to carry out historico-typological research into the walled city, which led to an exhausting campaign of repristination followed by "the liberation of the original civil units of volumes and aspects and

added uses" with a view to re-establishing the supposed "pertinent original appearance" of the urban organism. For their part, legislators also, taking up the suggestions of architects like Benevolo or Cervellati, contribute to the confusion: article 31 of law 457 for the safeguard of the physical consistency of the historic city is a veritable boomerang, with its intervention categories that approve ever increasing degrees of removal of the built object, from "extraordinary maintenance" (which admits the substitution of roofs, walls, fenestration and frameworks) to "urbanistic restoration".

Renovation of University Didactics

And meanwhile, also due to the effect of so much destruction carried out in the name of "restoration", the debate about the discipline grows and university studies are renovated: the first University Institutes for Monument Restoration are set up (in Florence: Sanpaolesi, from 1960) with archives and laboratories for the conservation of materials where methods for treating the stone used in historic buildings are experimented. The necessary relationship between chemistry and restoration comes to the fore. Sanpaolesi's works seek the chemical hardening of the "architecture stone" (title of an essay of 1966): the stone in Bartolini-Salimbeni and Rucellai palaces in Florence, the marble from the Apuan Alps in the Arch of Alfonso of Aragon in Naples, the sandstone already reduced to compressed sand on the facade of San Michele in Pavia, where, in order to make the chemical stone hardener penetrate deeper into the stone, powerful aspirators were used at the back of the facade to help the consolidant seep in. In Italian works then a virtuoso conservation (and consolidation) practice on the matteric palimpsest of the work became more and more widespread with the ensuing reduction of the parts of the stone considered "irretrievable". The aim of prevention against degradation takes the place of "restoration", which becomes a more and more exceptional practice. "A fundamental requirement," stated the text of the Instructions issued by the Ministry of the *Soprintendenza* in 1938, "must be timely prevention by means of painstaking maintenance of all the causes of deterioration in monuments and works of art; the activity of administrative offices,

with the participation of all the public and private institutions in any way involved must pay special attention to this preventive action, intended to conserve the historic datum in its integrity.”

From the Venice Charter (1964) to Integrated Conservation

“The conservation of monuments requires above all systematic maintenance,” according to article 4 of the Venice Charter drawn up by Pane and Gazzola and approved on the occasion of the second international fair of monument restoration in Venice. Starting from the basis that “in the restoration of a monument all contributions that define the current configuration of a monument must be respected, regardless of the period they belong to”, it states that restoration is “a process that must be given an exceptional character”. The authors aspire to distinguish clearly, both from a conceptual and an operative viewpoint, between conservation (covered by articles 4-8) and restoration (in the remaining articles, 9-16). The aim of restoration consists of “conserving” but also, they add, and here we can see the compromise reached by the two factions of the Congress (the technicians, architects and engineers on the one hand and the art historians and critics on the other), “revealing the formal and historic values of the monument”. Restoration “is based on respect for the old substance and the authentic documentation”. As in the distant medieval debate between “matter” and “haecceitas” between Saint Thomas and the Franciscans (Duns Scoto), the word “substance” is used instead of the term “matter”, which is shunned by many, in order to reach an agreement between the materialists and the followers of the Reine Sichtbarkeit movement.

The fact that restoration should be considered an “exceptional” act causes Bonelli to react and say heatedly, “This statement is quite out of place, deficient from any point of view and incapable of further development [...]; an incredibly poor and insignificant result”. In particular, he finds it really unacceptable that it says (in article 11) that “all contributions that define the monument’s present configuration should be respected, regardless of the period they belong to”.

And he denounces the Charter’s sleight of hand in “completely ignoring the identification of restoration in the critical process and its integral translation in a trial based upon the principle of assigning prevalence to the artistic value over other aspects of the monument; it does not value the consequences, when restoration takes on the task of rediscovering and liberating the work, giving it back its unitary image, even if this involves destroying the added parts”. Conclusion: the new Charter represents “a serious threat” and the reason for its unforgivable deficiencies depends on the fact that its authors are architects and not scientists, critics or art historians. In spite of these attempts to disavow it, the Charter is accepted as a fundamental reference in the discipline at international level. At Gazzola’s request, the ICOM became the ICOMOS and in Italy the debate about conservation was continued in 1972 with the diffusion, in circular letter no. 117 from the ministry on 6th April of the new Italian Charter which strives to state the merit of the contents of the Venetian Charter in greater detail by resorting to several specific annexes: instructions for the safeguard and restoration of antiquity (Romanelli, 1969); for the correct procedure for architectonic restoration (Barbacci, 1969); for the execution of painting and sculptural restoration (Brandi, 1969); for the preservation of historic city centres. At this time, the list of operations “forbidden without exception for all works of art of any period in the broadest sense” grows. The following are completely banned, without any possible misunderstanding: “stylistic or analogical completions; removals or demolitions that conceal the work’s passage through the different eras; removal, reconstruction or relocation in places other than the original; alteration of the secondary or environmental conditions in which it has come down to us; and the alteration or removal of patinas” from the historic document. The restorer is conceived as an attentive conservation technician in a white coat who makes sure he does not remove matter from the context and guarantees permanence with an investigation project followed by a localised intervention and respectful treatment of materials.

But such conservation works can only be successful if it is part of a more general intervention on an urban and territorial scale. In 1975, the year of European architectonic heritage, the Council of Europe organises a Congress about European architectonic heritage in Amsterdam to decree that this invaluable common cultural asset “must be considered not as a marginal problem but as the main aim of urban and territorial planning”. The Declaration of Amsterdam, drawing attention to the processes, strategies and technical and financial modalities for the management of planning and urban restoration intervention, gives responsibility to the local authorities and calls for the strengthening of the necessary legislative and administrative measures. In order to create a new policy of integrated protection and conservation, of which it mentions the points of the programme, the document ratifies the timely co-protagonist’s role of the culture of the project. “Since today’s architecture will be tomorrow’s heritage, the necessary steps must be taken to guarantee high quality contemporary architecture.” In apparent organic syntony, in Italy, specifically in Naples, a new school of research is developed, whose referent, with the motto of integrated conservation, is the economist Francesco Forte, on the one hand, and Di Stefano’s School of Specialisation and Doctorate Studies in Restoration, on the other. In the annual seminars at Ravello, where national lecturers on the subject meet, the common aim divulged by the ceaseless activity of the magazine *Restauro* is specified and strengthened.

Historic Gardens, 1981: Two Confronting/Opposing Charters

At a meeting in Florence on 21st May 1981 presided by the Belgian Raymond Pechère, the International Committee of ICOMOS-IFLA brought out the Historic Gardens Charter, with the title of Florence Charter in honour of the host city of flowers. The Italians participating in the round table organised on 12th September at the Academy of Drawing Arts did not like this dedication, and they suggested the Italian Historic Gardens Charter instead.

Here we have two opposing views of restoration. For the first group, a historic

garden is only “an architectonic and plant composition”, that is to say, something “alive, and therefore subject to deterioration and renewal. An expression of the close relationship between civilisation and nature [...], the garden,” it goes on, “acquires the cosmic sense of an idealised image of the world, which may be the object of earnest repristination.” In the event that it should have “completely disappeared” or never existed, the intervention “will have the character of evocation or creation”. Whereas the Franco-Belgian document completely shifts the problem of restoring gardens to the field of redesigning and architectural re-projecting *more antiquo*, the Italian Charter puts it in the line (congruent with other sectors of intervention) of safeguard and matteric conservation. The garden “represents a polymatteric ensemble”, a “material artefact” that “like any other asset, constitutes a limited, perishable, unrepeatable *unicum*” that “has its own development process, its own history (birth, growth, change, degradation) that reflects the society and culture that have created, built, used and in any case been related to it. So, to comply with the indications of the Venice Charter and the 1972 Provisions, the restoration works “should respect the historic process of the garden, since this process materialises the evolution of the structure and the evolutionary configuration that it has assumed over the years”. In consequence: “Therefore, every operation that tends to give priority to an individual stage acquired at a certain historic period and re-create it *ex novo* ignoring posterior phases would take away from its richness and would be reductive and decidedly anti-historic”.

The Authenticity Debate

In the Franco-Belgian document, the notion of “authenticity” is addressed and forms the basis for a new debate. “It concerns both the design and volume (?) of the parts and its decoration or the choice of the vegetable or mineral elements that form it.” Authenticity then will be reduced to a project problem (design, volume, etc.), essentially of a formal nature. It has nothing to do with etymology or material culture or the uniqueness of the document. Authenticity and autographs are two notions that have a great deal in common. The Greek root (“autos”, *per se*)

that refers to a sequence of physical gestures that leave tangible signs, material traces. “Authentic” is a term from late Latin that circulated in protomedieval times and makes reference to the *authentics*, self-employed craftsmen, authors who work to produce one material document or another (which they autograph), about whom other operators (historians, analysts, scientists) ask questions in a ceaseless exercise of certification/verification with the intention of validating the authenticity of the source. Every work, or rather every fragment and tangible component of it, as an object of the attention of those who enjoy it, is liable at all times to authentication tests (historical, philological, autographic, etc.). Authenticity is therefore a notion inseparably linked to the speaking presence of a physical testimony. And it cannot do without a material referent, a text to certify. All the more so in architecture: authenticity is only the part of masonry and the matteric components that bear the mark of man’s hand and the passage of time. We proposed precisely this reflection in the meeting about the theme “Authenticity and Monumental Heritage” promoted by Di Stefano and the magazine *Restauro* in Naples in 1994, in view of the ICOMOS Congress at Nara on the same subject. This led us to refute the argument of “formal authenticity” taking the notion exclusively to an abstract immaterial plane of the ideas, that is, the iconic image considered as an invariant, safe from any scratches caused by time. A hypostatic notion, not a process, that ill adapts to the continuous evolution (and characterisation) of the testimony of architecture, which does not constitute an easily reproducible alographic art, but quite the opposite, autographic and irreproducible. (Walter Benjamin had already written, in 1936, “The *hic et nunc* of the original constitutes the content of the notion of authenticity”; and still more, “the authenticity of a thing integrates everything transmissible about it: because of its origin, its material duration and its historical testimony that rests on materiality”.) As we can see, the litmus paper of authenticity becomes crucial for the future of our discipline: either it is invoked for the sake of the cause of conservation of the singularity and irreproducibility of the built asset or it goes back to the fluctuating (and

sterile) subjective question about which of the “two arguments” should prevail (the artistic or the historical) in a false problem that Riegl had brilliantly resolved at the dawn of the last century when he wrote precisely that “an artistic value is also a historical value”, but also “and vice versa, every historical value represents an artistic value (with the respective demonstration by reduction to absurdity). We sincerely believe that nobody today can really want to turn back the restoration clock to before 1903.

The Future of Conservation between Doctrine and a New Type of Work: the Sponsored Role of Guarantor and ICOMOS Reference

In Italy the recent renovation (1999) of old fascist laws about preservation established by Bottai in 1939 and still in force (one of which, law 1089, was about monuments, another, 1497, about the environment and landscape), regrouped in the Single Text for the Preservation of Cultural Assets, represents perhaps the most recent sign revising the aims of the discipline in favour of permanence. The legislator too, after twenty years of pillaging our architectonic heritage due to the badly formulated application of Law 457 (particularly article 31), seems to have finally listened to the chorus of voices calling out for restorer architects dedicated to the task of safeguard. In particular, with article 34 of the new Single Text declaring that the aim of restoration is “to maintain material integrity and ensure the conservation and protection of cultural assets.”

We now trust that these words will be followed by deeds. A new season of intervention on architectural heritage has opened, in which new responsibilities will be required for a new specific demand and therefore new integrated professions, beginning with all those that can make crucial contributions to an in-depth project of knowledge. Among the new sectors of the discipline that, as an indispensable premise, are required to provide the necessary foundations for correct conservation works, we can include:

1. Recourse to a *nouvelle histoire événementielle* (quantitative and comparative, rather than subjectively qualitative) of the construction work, the changes of use undergone by the building

and its successive restorations, to be carried out with the help of first-hand sources (the building, archives);

2. All fast and useful forms of elevation (photographic and manual) as a first examination of the current state of the masonry.
 3. A detailed elevation of the (structural and matteric) pathologies, an essential basis and an integrated part of the documents that form the conservation project;
 4. The vast field, currently in expansion, of preventive diagnosis, physico-chemical analysis, load tests or preliminary non destructive research;
 5. Expansion of the analysis of the context and the conditions of the medium, research into the environmental situation and the external causes of degradation in relation with environmental contamination: the state of the air, the ground (geotechnical tests) and actions of superficial and deep waters.
- These points should characterise a correct (although never too exhaustive) examination project. As regards the posterior intervention, restoration should opt for the clinical cure of the material document and the drawing up of a detailed project of physico-chemical safeguard of the status and existing material stratification, capable of guaranteeing ulterior palimpsests centuries of life and conveying to coming generations the commitment to undertake timely periodical maintenance safeguard works. With the absolute conviction that this conservation programme can in no case be carried out without a parallel responsible participative project that responds (in forms and in methods suitable for the culture of a contemporary project) to the satisfaction of the necessary maintenance techniques with the least possible consumption of the integrity of the built asset (adaptation of all sorts of installations, equipment and compatible fixed furniture). This obligation probably goes beyond the discipline of a good conservator and specifically involves the culture and the *modus operandi* of the architect designer and the new project, which is destined therefore to be compared in an autonomous, transparent manner, as the ulterior parallel autograph, with the historic document to which it has been added, producing a looked-for and authentic added (cultural and economic) value.



Andrea Schiattarella

THE RESTORATION OF VILLA DURANTE IN ROME

Historical Introduction

The construction of the building commenced in 1889 according to a project designed by the architect Giulio Podesti (1857-1909) for Francesco Durante (1844-1934), an internationally renowned surgeon, considered to be one of the fathers of modern surgery. Born in Letojanni (Sicily), Durante moved first to Naples and then, at 22 years of age, to Berlin. In 1870 he was military doctor at the cruel Battle of Sedan. He followed the Prussian army from there to Paris, where he worked for three years. In 1873, Rome University offered him a course of Surgical Pathology and thus he initiated his brilliant teaching career. At 33 years of age, he became director of the Surgery Clinic in Rome. He travelled around Europe and the United States and his name soon became known on an international scale: he invented the “Durante clamp”, an instrument still used in operating theatres today. He experimented and consolidated his prestige in operations never before performed. He became the doctor of the Savoy royal family and the Emperor of Austria, whose daughter’s life was saved by his ministrations.

In 1889, Francesco Crispi, head of the Italian government, offered him the post of senator for life for his scientific merits. This was the high point of his career. In those years, Durante became promoter of the large project of the design of the Polyclinic in Rome. And it was just around the area of that building, in the vicinity of what had once been Villa Patrizi, that he decided to have a new house built, also in 1889.

Description of the Villa

The facade with a Neo-Renaissance structure is divided into two orders. In the centre there is a pronaos with four Taormina marble columns supporting a balcony with a balustrade on the first floor. The cladding of the facade is false bossed Travertino, larger in volume on the ground floor and on the corners plates. Upstairs a large cornice runs over the frieze, where these words are inscribed: “I

have come from the brilliant pen of Professor Occioni, except for one line from Horace, which I will allow the reader to guess” followed by these lines in Latin: “Ingenuas testor studio quo prosequare artes; Non simulata quies renovat cum corpore mentem; Valeat posesor –oportet– si comportatis rebus bene cogitat uti; Late prospiciens meditor que magna fuere.” One enters a richly decorated and spatially suggestive central hall through a narrow entrance covered with a coffered barrel vault. In an almost Baroque effect of intensity, from this narrow vestibule one goes into a double height space on which light beams down from above on a series of successive frames around the monumental staircase in the background and the painted vaults above it. “The atrium and the staircase are a masterpiece of design and good taste, where we can admire beautiful conchiferous marbles that would delight both naturalists and lovers of classical magnificence: there is also a great deal of alabaster. The parts of the columns and the walls that are not made of marble are perfect imitation or chemical marble, polished in such a way that it is impossible to distinguish between the real and the chemical.”

In the centre there is a great Hellenistic style two-colour mosaic, while a large skylight takes the place of the *impluvium* of the Roman atrium. At the back, two bas-reliefs symbolise Sicily and Rome, that is, Professor Durante’s homeland and adopted city respectively.

Paintings

The paintings inside the building are especially important. “A lover of the arts and a friend of artists,” Francesco Durante “commissioned some of the latter to paint the frescos in the inner rooms.” Thus works by the Sicilian Giuseppe Sciuti (1834-1911) and Salvatore Frangiamore (1853-1915) are mixed with those by the two Romans Giuseppe Ferrari (1845-1922) and Enrico Coleman (1846-1911). In 1891, shortly after the villa had been completed, the latter was commissioned to paint frescos on the twenty-nine lunettes of the first floor loggia. Most of these paintings have his beloved Roman countryside as their theme.

Giuseppe Sciuti is also the author of the tempera painting, signed and dated 1892, on the cistern vault in the first room on the right, representing the four seasons, the ballroom, representing dawn, and the magnificent cycle on the staircase vault on historical and scientific themes. In the first room on the right, which used to be the library, an anonymous painting that could possibly be attributed to Sciuti, representing architecture, astronomy, music and painting, is a sort of tribute to all those who participated in constructing the building. The works and techniques used in decorating the villa deserve special attention. We know how particular Durante was about choosing his master craftsmen, many of whom, especially stonemasons and plasterers, were from Sicily. The skill put into the bas-reliefs, the capitals, the marble and plaster work in the central space and the workmanship of the stuccoes in the soffits and the friezes in the reception rooms are on a par with the work of the cabinetmakers in the walnut doors and jambs. There is such attention to detail that the cast bronze handles were especially designed and made and bear the letters F.D. inscribed on the pieces that form them.

The Restoration Project

In spite of the neglect and the great alterations undergone by the villa in recent years, on our first visit as architect restorers we were quite overwhelmed by its extraordinary quality. Behind the facade, whose austerity we had noticed on our arrival, a marvellous space was concealed, formed by sequences of wings and perspectives in all directions, which revealed the handiwork of an extremely skilful author.

We were still not familiar with its history, but from the outset we realised that we were about to recuperate a building whose excellent quality could be intuited, in spite of a few *faux pas* that might have been the result of a flaw in the project or rather, as we later discovered, interventions made at a later date. In fact, some situations resulted in a decrease of quality: foreshortening of perspective finishing in undecorated vaults or insignificant walls, disconcerting colour schemes or bays with unbalanced proportions.

For that reason it was necessary from the start to study and understand the architectonic work we had before us in order to discover its real consistency. The attitude adopted in the restoration was one of the utmost respect for the obvious quality of the preexisting building and our objective was to attempt to restore it to its original condition.

The preparation of the works went in three directions. The first, historical in character, had to do with the configuration of the villa, but also the participation of important figures of late nineteenth century Roman culture and the reconstruction of the vicissitudes and the role they played in Italian and international history during those years. This phase was developed in the Capitoline Archives, where the building licence was found, but also in other sources like the Academy of Dramatic Art, Letojanni Council and private collections, which brought to light iconographic material that was very useful in reconstructing the original decorative motifs.

The second, of a cognitive nature, consisted of drawing up an extremely rigorous metric chart, which included the most insignificant elements of the decoration in order to get an overall picture of the building, the relationship between the different parts and the alterations.

The third was investigative, and consisted of performing tests on the walls by means of stratigraphic examinations to discover traces of the original treatments and materials and, once they had been found, to verify their state of conservation and entity. The first results were so surprising that we continued along these lines of research. The investigation carried out in the Capitoline Archives brought to light the original floor plans and sections of the 1889 building licence. Later, in Letojanni Town Hall, a perspective was found among the plans of the project. This material was a privileged source of information which, together with other contemporary documentation, permitted us to understand the building systems of the area and other specific features of Villa Durante.

The urban context where the villa stands was conceived as a residential area for both intellectuals and the new ruling classes of the Kingdom of Italy. Evidence

of this was found in a planimetry of the Villa Patrizi neighbourhood dated 1904 naming the proprietors of the villas, such as, on the one hand, artists like Sciuti, who, as we mentioned above, made many of the frescos for Villa Durante, but also Ximenes, a friend of Senator Durante's, Koch, Nicholini and, on the other hand, outstanding exponents of society, including, apart from Professor Durante and Piaggio, the Orsinis, the Rufos, the Savellis and even the Levis, the Saaduns and some eminent representatives of the international community in Rome: the Mayors and the Kauffmanns. This group belonged to the ruling classes that were aware of their role and prepared to lead the destiny of a country that was about to take its first steps.

By comparing the floor plans with the actual building, reflected in the detailed metric mapping, variations in the layout of the villa were revealed, of which an important instance is the room situated over the facade giving onto the garden, replaced by an octagonal vaulted room beside the ballroom, and the insertion of the lift which first appears in a 1939 cadastre.

Our initial concern during the first study visits had to do with the possible loss of the original appearance of the decoration of the villa, which could have disappeared or been altered in the successive refurbishment works performed. For this reason, the documentary analysis was followed by tests and essays to verify the quality and consistency of the original materials, their state of conservation and the possibility of recuperating them. These early studies yielded promising results. The following elements reappeared out of the past almost intact: alabaster stucco treatments of the ground floor walls; the surprising midnight blue of the loggia walls on the upper floor; the first female figures on the staircase vault and the ballroom, whose naked figures had triggered the decision to cover up all the paintings; the traces of the original mosaic and terrazzo flooring under the carpets, very badly deteriorated because of the glue; and a surprising soffit of stucco coffers over the room leading out to the garden, which had disappeared when the room was divided in three smaller rooms covered with gypsum and wattle vaults. These discoveries and their state of repair

confirmed the possibility of restoring most of the old nobility to Senator Durante's residence. At the same time, the names of the protagonists that had contributed to making the building (Durante himself, Podesti, Coleman, Sciuti) reminded us of its enormous documentary value.

Once the extraordinary worth of the villa had been confirmed, the refurbishment strategy went from the caution exercised in the initial approach to the most rigorous respect for the original values of the context, reducing the interventions to a minimum, restoring the spaces to their original functions with the greatest possible transparency. The options for the layout and the use of each of the rooms could not but follow the same logic: repristination of the original spaces where possible and a non-invasive use of them. The semi-basement, originally used by the servants, now houses staff offices, while the ground floor and the first floor are used for representation, external relations and management.

The Works

After obtaining the authorisation required, the works began at the same time on the first and ground floor in September 2000. In fact, it was urgently necessary to waterproof the roof to protect the decorated vaults and repair the skylights so as to prevent the frescos from suffering damage due to the entry of rainwater. Meanwhile, on the ground floor of the villa ascending damp caused by capillarity was dealt with, secondary walls were demolished and air chambers were enlarged to hold the equipment for heating and air conditioning, according to the precise indications of the technicians from the Ministry of Culture.

Apart from hygienic services, installations and paintwork, intervention on the walls was reduced to a minimum except in the semi-basement. Here the plaster was removed to reveal tuff and brick bonding, whose quality was such that we decided to leave it naked to document the palimpsest of building techniques as though it were a historical finding.

The only important works on the other floors had to do with the repristination of the separating wall between the bay situated at the west corner of the villa and the one over the entrance hall. On demolishing that wall,

the stucco vaults also disappeared, and only traces of the section designed by Podesti remained. In this case, as it was a necessarily innovative intervention and there were no graphic documents or photographs to consult, we deliberately decided to make a contemporary work. There are two vaults, one barrel and one cistern, made in an abstract way, over the side walls, rising slightly at the crown of the two rooms reproducing the original form.

The same attitude was adopted at two other important points. In the late nineteen thirties, a lift had been inserted in a room for cleaning equipment on the first floor, beside the service staircase, connecting the three floors of the building. The heavy wall that closed the bay of the lift blocked the light, creating a sensation of marginalisation and degradation in the area, with the lift as a negative catalyst of the context. Not wishing to relinquish this element, essential for the new use of the villa, we inverted the relationship converting this technological and linguistic innovation into an element to re-qualify the surrounding spaces. The central ideas of this choice of design were a sense of vertical permeability accentuated by widening the bay of the lift to permit a shared view from one floor to the next, the recuperation of the sources of illumination using the bathroom windows that were already present when the nineteen thirty works were performed and the reuse of the linguistic value of technology.

For these works it was necessary to use structural glass on vertical glazed-steel supports, which transform the lift block into a large glass unit that runs through the whole volume of the building.

The other solution that does not renounce blatant contemporaneity was the result of an unpremeditated choice that the vicissitudes of the works suddenly made necessary during the course of the refurbishment. The intention was to locate toilets inside a room beside the lift that had originally or in the course of the historical works been divided in two, one part acting as a corridor and the other as a servants' living room. The idea was to reconstruct a wall to permit a filter and distribution area. For this reason, a false plaster-and-wattle ceiling was demolished, to reveal an unexpected vault completely decorated

with beautiful naturalist style details and figures. The building of this wall would have meant an unacceptable fragmentation of the decoration and an inappropriate deformation of the preexisting architecture. The solution arose precisely thanks to the proximity of the lift. A 3 m high wall of opaque glass, later dematerialised with the installation of perimetral lighting, progressively more transparent towards the top, affords an almost complete view of the decorated frieze.

Recuperation of the Decoration

The most complex and significant part of the works was the scientifically rigorous recuperation of the interior and exterior decoration. The most delicate and demanding operation was the recovery of two frescos that had been covered over with cement mortar in the nineteen sixties. Of the first of these, located on the stairwell vault, three preparatory cartoons of the original four still existed in the Galleria Nazionale d'Arte Moderna, which afforded at least a partial foretaste of the iconographic repertoire we were going to discover. Of the second, however, we had no knowledge whatsoever, although later we found out that the cartoon titled *Allegoria con figure femminile* (Allegory with Female Figures), also at the Galleria Nazionale d'Arte Moderna, was probably the preliminary sketch for it.

We had trustworthy documentation of both in the form of photographs taken in the nineteen forties, discovered in the archives of the Academy of Dramatic Art in Rome, whose headquarters at that time was Villa Durante. The photographs depicted most of the major rooms in the building and showed the good state of conservation of both the frescos on the vaults and the flooring. We were of course very interested in seeing the parts that had since been lost. In the image on the vault over the staircase, the side dedicated to the *Vespri Siciliani* could clearly be seen, and in another among the arches in the loggia, the fresco of the *Scoperta della stella* (Discovery of the Star) could be made out. In the ballroom, there was a fresco dedicated to Dawn, the decoration of the fresco that acted as a cornice and the mosaic floor completely lost today. Finally, in another picture of what was then the dance room, we saw for the first time the coffered

soffit and its frame decorated with cherubs, which at the time of the elevation was three rooms with false plaster vaults.

It was extremely valuable documentary material, because the frescos had been found to exist during the tests performed, but we did not know their state of conservation or the possible gaps in them. According as the layer of cement covering the murals was removed, we discovered that, underneath a sort of glaze that reduced the brightness and expressive force of the colours, the painting was intact and could be almost completely recuperated by means of a painstaking cleaning process. For that reason, hardly any reintegration was necessary because there were no important parts missing, with the exception of the decorative cornice in the ballroom and the coffered room. In the former, in view of the very poor state of the cornice due to the aggressive action of the layer that covered it, the inscriptions and main elements of the cornice had to be reconstructed, using the photographs taken in the nineteen forties as documentary testimony.

The room located under the first floor terrace had suffered serious leaks over the years. The state of degradation of the roof and frieze decoration was probably so bad that the previous owner had decided to ignore it and make a false ceiling to cover it over. Large areas of the painted or preparation parts of the frieze decoration were missing or had come loose. These gaps were filled by reintegrating the plaster and then the original images using slightly softer shades of colour to permit historical identification.

The Flooring

Inside the building, the most important technical problem was the state of repair of the original flooring. The mosaic floors were in a relatively passable condition. Although the tesserae in some places had been re-stuck or had come loose, our intervention consisted of removing the loose pieces, cleaning them and putting them back in place, injecting a hydraulic-action adhesive, removing the treatments applied in the past, impregnating the joints with mineral reinforcement and filling them and finally polishing the whole surface with non traumatic methods.

On the other hand, from the first examinations made under the carpet, we had found that the original multicoloured Venetian style terrazzo floors with mosaic inlays in the reception rooms and the rooms on the first and second floors had been badly damaged by the adhesive used, which had almost completely spoiled the surface, and the channels opened up to install electricity. The original plan to recuperate these floors by filling in the gaps was abandoned in view of the results of the physico-chemical analyses made on the underlying layer of lime, which was sulphated and had come loose in several places. With the passage of time, the state of the base layer had caused instability spread by the stone grain, with faulty adhesion in the preparation layer and faulty cohesion of the mortar causing loss and erosion of the superficial material and the ensuing gaps of different size and depth.

In this way, we reached the conclusion that the only intervention that could safeguard the rooms and the decoration of the whole villa consisted of a philological reconstruction of this flooring in form and material.

After dismantling the mosaic to repair it in the workshop and performing tests on the terrazzo to mark and identify the marble pieces, the base layer of terrazzo was relaid and reprimed. The work carried out by a specialised company achieved a practically perfect result, restoring the floors to their original splendour. The restoration was completed in July 2001, after only ten months' work, carried out with great passion and professionalism by all those concerned: the promoter, the project designers and the workers.



Enrique Martínez

THE RESTORATION OF COLÓN MARKET

Situated in the first expansion zone of Valencia city, between Cirilo Amorós, Conde Salvatierra, Martínez Ferrando and Jorge Juan street, Colón Market, with its surface of 4,337 m², is at the heart of one of the busiest shopping area in the city which is the very centre of the city today. The project was entrusted at the time to the former municipal architect of Valencia,

Francisco Mora, who, influenced by Catalan Modernist architects like Domènech i Montaner and Puig i Cadafalch, among others, designed a large longitudinal space with three naves of metal trusses, closed at the ends by two brick and stone portals abundantly decorated and coloured like triumphal arches. The building was inaugurated on Christmas Eve 1916, to the delight of the society of the time.

The Premises of the Work

The need to carry out restoration works on the monument due to its precarious state of repair was added to the need to provide parking lots and the wish to find a new use for the market space, more in keeping with the times. The old market had practically stopped being used as such when new food stores and shopping centres opened in the area. These initial premises led to the decision of performing a global intervention on the building, which we shall describe below. At the first stage, dealt with in this article, apart from the restoration of the building, it was decided to build three basements for parking and a store in the semi-basement. In the second phase, the building was conditioned as a commercial space.

The First Phase of the Work

The first phase of the project concentrated on three aspects, very different as regards complexity, dedication and sensibility. The first action consisted of reinforcing, consolidating and readapting the existing foundations to permit the excavation of four floors underneath street level; the second consisted in the recuperation of the historic nave, which had undergone settlements and serious rusting at the joints of the basic iron structure; and the third stage that was to rehabilitate the brick masonry of the portals and recuperate all the elements that had been lost or replaced so as to restore the building to its original appearance. The first part of the intervention entailed the difficulty of having to work on the whole building without being able to disassemble any of the main pieces of the existing metal structure. Besides, the need to maintain the Modernist portals intact made it necessary to create a new structure

that would permit the excavation of the basements, for which interesting and complex excavation and reinforcement techniques were put into practice. Once the results of the tests were obtained and taking into account other considerations such as the depth of the excavation, which should be at least 15 m, the proximity of the adjacent buildings and the situation of the phreatic level, it was deemed necessary to build, before starting the excavation, screen walls that would also serve as final walls for the parking basements and whose last stretch would prevent water from entering the building and thus facilitate the drying of groundwater during building. Once the screens were built, the bottom would be paved with slabs, which would have to have enough of a border to counteract subpressure and guarantee that the basements would be watertight.

Reinforcement of the Portals

The reinforcement of the facades involved replacing the foundations by others that would permit the excavation of the basements. The critical moment of this operation was when the building stopped being supported by the old foundations and changed to the new.

For that reason, foundations were designed by “sewing” the existing loadbearing walls in order to transfer the loads to the new foundations with girders and piles. This new process required meticulous workmanship with manual methods and systems of cut and perforation avoiding percussion. Apart from being difficult and toilsome, these works involved continuous monitoring, as the state of repair of the brick masonry was worrying to say the least.

Pile Pillars

Before finishing the perimetral screen walls, the piles for the first phase of the project were made. These piles of concrete with metal profiles were made to permit the downward process that characterised the excavation, and they were completed during the upward phase with metal pillars that coincided with the axes of the wrought iron pillars now in existence. These piles were imbedded in the resistant layer of the muddy clays. Because of the order of the building process (downwards),

it was necessary to leave a metal profile inserted in the pile. Thus the piles were filled with concrete up to -14 m, and from this level to ground level the space between the profile and the perforation diameter was filled with gravel. This procedure made it possible to build the final pillars before excavation took place, and all the works were then performed upwards.

The Upward-Downward Method

The complexity of the operations carried out prior to the excavation of the parking basements can be summed up precisely in the method used for their execution, based on the building of the definitive frames in two stages, one downwards and one upwards. Once the screens, the reinforcement and the piles had been made, the frame of the ground floor was built *in situ*, which made it possible to tie it to the heads of the screens to prevent horizontal movements. The next two frames (for the semi-basement and the first parking basement) were excavated and the intermediate frame of all the basements was executed at -7.5 m, staying the screens in the intermediate zone. This frame was made without having to resort to water extraction pumps because it was over groundwater level. Then the other two basements were excavated with the aid of pumps to drain the groundwater, down to -15 metres, where the foundation flagstones were laid. At this stage the removal of soil was performed by means of a skip elevator that extracted the earth from the bottom and poured it into trucks waiting to collect it on the ground floor. Once the first downward part had been finished, the upward metal pillars were put in place in order to build the last two frames to complete the structure of the market, making these pillars coincide with the original structure. After the structure had been completed, the weight estimated to avoid syphoning of the flagstones at the bottom had been counteracted, so the use of the pumps could be decreased. At the same time, the exactness of the calculations was checked and found to be correct.

Works Performed on the Metal Structure

One of the first considerations to be taken into account about this operation was the poor state of the structure and particularly

the joints, which had been affected by the roof drainage system, whose leaders ran down the middle of the wrought iron pillars. In heavy rainfall, the outlets of the gutter overflowed and the pillar acted as a leader, a circumstance which had caused the structure to corrode and sections of the joints to come loose. Besides, the rust increased the actual section of the screwed or riveted plaques producing an increase of stress that made the rivets keep falling into the street.

Therefore, taking advantage of the fact that the corbels giving on to Martínez Ferrando and Cirilo Amorós street had to be disassembled in order to build the screen walls and on account of their poor state of repair, which had required them to be propped for years, cleaning was initiated on one of them, causing it to disintegrate as a result of the advanced rusting of its profiles.

For that reason it was necessary to dismantle a joint both at the central bay and the end bay (the one supporting the corbel), which were the problematic joints where the rainwater leaders were situated. By disassembling them, we hoped to determine efficaciously and safely what intervention and execution method was necessary to repair it, because all the joints were believed to suffer some degree or other of the same pathology and, consequently, it was essential to plan the intervention very carefully in advance. From this point onwards, repair works were started by mending every second joint in order to cause as little movement as possible in the structure. To this end, little scaffolds were set up all along the central nave to permit workers to move along as fast as possible if a problem arose during the intervention.

The end joints were the first to be repaired because of the added facility of having the corbel dismantled. For this purpose, connectors and tie beams were designed with steel profiles to support the vector stresses that converged there and prevented the joint from shifting. Once the joint was fixed, the plates that formed it were dismantled and a templet was designed showing the screw and rivet orifices in order to make a plate with the same characteristics and slip it into place perfectly, since each joint had the orifices

in a different position because of the assembly system and the deformation that existed in the structure.

Once the end joints had been repaired and reinforced, work was initiated on the inner joints in the central pillars supporting the arches of the central nave using a system of tensors that fixed the arch from one end to the other, preventing it from opening and permitting the dismantling of the joint without creating unnecessary stresses. The structure was completely repaired when all the mending plates, rivets and screws had been replaced in the joints. The original evacuation system was respected improving the interior channelling with PVC pipes instead of the old zinc one, protected on the outside by a low retraction mortar where the gutter meets the also new roof, to which a waterproof coating was applied.

The restoration process

The historic-artistic importance of the Colón Market building as part of the cultural heritage of the city and its location in the centre demanded a specific treatment for each piece of the conservation and restoration of the sculptural and ornamental elements of the principal facade according to the material of which it was made (Moncada limestone, Borriol limestone, artificial stone, mosaics, metal objects, wood, ceramics, etc.) and its state of repair. The facade ensemble is basically made up of: Mobile or Norwegian pine woodwork, metal work of wrought iron, dolomite limestone from Moncada, socles of Borriol limestone, artificial stone sculptural elements made from mixed mortars, mosaics with vitrified tessaras, ceramic mosaics, *trencadís* mosaics, ceramic building elements made with lustre ceramics, naked brick on the main walls, polychromy, ornamental friezes, tempera painting and lime sgraffito work. The restoration methodology applied was based on the analysis of the state of conservation of each of these elements, an investigation of the causes underlying the pathologies and a search for the most suitable intervention procedure for each case. This process was a painstaking but interesting task which provided good understanding of the deterioration process of these elements.

Stonework in Colón Market

Both in the socle of the monument and the outside fence, Colón Market has a sort of stone typical of the area known as Moncada stone. The cleaning process included the steps necessary to consolidate and afterwards clean this stone.

Before cleaning the stone, elements separated by cracks were stuck. The external sealing of the cracks was performed by using vinyl and sand polyacetal and then injecting the consolidating product through a hole made for that purpose.

The process followed the phases below, depending on the piece:

- Preconsolidation consisting of injecting vinyl polyacetals into the chinks and cracks and impregnating them with a general consolidant with silica acid ester to enhance the resistance of the rock and thus prevent loss of the original volume.
- Mechanical cleaning with soft root or nylon brushes so as not to damage the rock with the aid of scalpels, spatulas or similar instruments in areas where the dirt offered more resistance. The elimination of crusts, carbonates, sulphates with mechanical elements like dentists' drills, dental descenders or the projection of glass microspheres.
- Chemical cleaning and neutralisation of stains and resistant dirt or dirt that had penetrated a long way into the rock, where compresses containing bicarbonates, neutral strippers, etc. according to the nature of the dirt (oxides, greases, cements, graffiti...). Then the remaining part was neutralised with demineralised water and a suitable reagent.
- Consolidation by injecting vinyl polyacetal and epoxy resin, with or without a tyxotropic load, depending on the depth and the size of the cracks.
- Volumetric reintegration and regrouting. At this stage moulds were made with expanded polystyrene, plaster or greasy pastes, and moulds with polyester resin and fibreglass and latex, depending on the sort of problem involved. Reproduction by modelling in situ was used and also by pouring. The material used both for modelling and for straining is an artificial material made with acrylic resins and modified mortars. Finally to attach the reproductions to the original adhesives and rods of fibreglass set at an angle of 45° were used.

The different joints where the original mortar had been lost or damaged and the joints grouted with modern mortars and added cements were repaired and replaced with mortar made with fat lime and stucco and a flexible latex component to avoid cracking or with the same mortar used for the substitutions.

To adjust the colour, a superficial patina of natural pigments made with lime water and mineral clays was applied to the stone elements that had lost their patina and did not fit in with the rest of the ensemble.

Finally the masonry was waterproofed in such a way as to leave the rock permeable to gases but not liquids.

Mosaics and ceramics in Colón Market

The building has a great deal of ceramic elements in its ornamentation: mosaics, *trencadís*, tiles, friezes, enamelled reliefs, etc. Although the state of conservation of the mosaics and tiles and vitrified ornamental pieces could be described as good, an accumulation of dirt, pollution and dust was detected on the surface, which concealed the original colours and forms. During a preliminary inspection, there were found to be no deformations caused by damp, which might have been expected because of the nature of the material, but there were some volumetric changes and cracks as a result of the contractions and dilations between the ceramic and the adhesion mortars and even some gaps in places. However, the number of these gaps is very limited thanks to the excellent adhesion between the bisques and the mixed mortar of sand, cement and lime, which was verified by percussion. Some volumetric changes and cracks as a result of the contractions and dilations between the ceramic and the adhesion mortars and even some gaps in places. However, the number of these gaps is very limited thanks to the excellent adhesion between the bisques and the mixed mortar of sand, cement and lime, which was verified by percussion. Apart from these gaps, the grouting of the mosaics and *trencadís*, which was in a poor state of repair in places, was found to have disappeared, as had the vitrified layer and the enamel of some pieces. Metal pieces were inserted in different areas of the surfaces. Rusting of the metal parts and the

ensuing increase of volume had caused breakage in the mortars and ceramic pieces. This problem was worse in the cupolas bearing the lightning conductors.

For that reason, the following procedure was applied. The first step was taken to eliminate excess superficial dust, for which soft brushes and an industrial vacuum cleaner were used so as to permit a proper examination of the work and at the same time ensure correct execution of the following steps like the consolidation of the piece and not of the dust lying on top of it.

Cleaning of the joints was begun with chisels and brushes so as to free the joints and alleviate the pressure exerted by some elements on others. Natural sponges very slightly dipped in deionised water were used to complete cleaning of the vitrified ceramic pieces in successive applications until the pieces were left as free as possible from dust and soluble salts crystallised in the form of efflorescence. Volumetric reintegration was performed with the same techniques and colour schemes as the existing ones. The pieces to be replaced were fired in a reduction or oxidising kiln depending on the vitrification characteristics and marked "R" to facilitate identification.

These pieces were set in place with mortars made with lime, acrylic resins and cements, making sure that the dilation contraction coefficient was inferior to the ceramic to avoid future loosening problems. The pieces to be replaced in delicate spots were fixed with fibreglass anchors.

Brick masonry

The brick masonry in Colón Market is very important both for its volume and its composition in the two large portals giving on to Conde Salvatierra and Jorge Juan street. All the brick used in the restoration is solid ceramic brick, mostly rectangular pieces, although there are also pieces made in a special mould, such as the ones in the pavilions and towers at the ends of both portals.

The state of conservation of the naked brick masonry was defined as quite acceptable in general and each part was classified according to its natural and mechanical pathologies. Besides, the

different covered areas of the buildings were used by birds, mostly pigeons, for nesting. This involved areas with a great accumulation of excrement that segregated hydrochloric acid which attacked the different components of the masonry. Different metal elements had been inserted in the brick masonry by means of perforation and had rusted over the years with the ensuing increase in volume. This change of dimension of the metal elements imbedded in the masonry had caused breakage and some very large cracks, such as the imbedding of the canopy on the Conde Salvatierra facade. Apart from tensions and breakages, oxidation had also caused rust marks to appear on several parts of the facades.

Once the intervention axes had been clarified, the cleaning process of these elements began with an initial jet of hot water applied to the whole building. The appearance of soluble salts on the cleaned bricks was then observed. In view of this situation, a Turco brand stone cleaner was applied (sodium hydroxide), a powerful non abrasive cleaner for natural or artificial stone surfaces that is applied with a brush and left between 15 minutes and 2 hours to act and is then washed off with abundant hot water and cleaned with acetic acid. This procedure yielded apparently good results. Even so, some parts of the facade still presented salt efflorescence, which was cleaned with deionised water applied with sponges, avoiding excess wetting, and the result of this process was finally satisfactory.

The procedure concluded with the application of the water repellent called Tegosivin, sprayed at a distance of at least 5 cm from the masonry and used to waterproof porous surfaces. This material endows the masonry with waterproof properties once the solvent evaporates after application, when the active substance penetrates in the material hydrolysing in pores and capillaries by condensing and creating a waterproof area.

This application managed to reduce the absorption of water, protect against deterioration caused by humidity in the work, avoid efflorescence, reduce thermal conductivity and thus increase thermal insulation and allow the wall to breathe perfectly.

Sculptural elements of artificial stone

From the different inspections performed, it was verified with absolute certainty that the sculptural elements in artificial stone were in a worse state of repair. The artificial stone or architectural mortar elements in Colón Market's portals comprise one or several pieces, reinforced with steel rods on the inside.

The rehabilitation process of these elements was based on the same criteria as were applied to the rest of the materials, beginning with the elimination of algae, excrements, etc. with soft root or nylon brushes so as not to damage the mortar. The removal of crusts (carbonates, sulphates, etc.) was performed with dentists' drills, spraying of glass microspheres and manually used scalpels.

Demineralsed water at low pressure and 60°C was used in general cleaning tasks. For resistant stains and dirt compresses made with bicarbonates, neutral strippers, etc. were used, depending on the classification of the dirt.

The most delicate point to avoid future problems of deformation and breakage in these pieces was all the non ornamental metal elements that secure them. These elements, both visible and invisible, were extracted with the aid of a magnetic wave detector. The pieces were later reinforced with fibreglass pins at an inclination of 45° over the horizontal plane, using epoxy resin as an adhesive and filling in the holes with lime mortar to prevent ultraviolet radiation.

Within the tasks performed in the restoration of the market, it is necessary to cite the recuperation of all the ornamental elements that had disappeared, thanks to the historic documentation such as old photographs. These elements are the string of garlic hanging on the Conde Salvatierra facade, the goat's head and the crowns on the little cupolas on the towers on the same facade.

These pieces were moulded by the restoration team on the basis of graphics and sketches and then fashioned out of greasy pastes. In this way polyester resin and fibreglass moulds were made, filled with Parrot mortar for restoration, attached to the masonry by means of fibreglass rods, suitably coloured and waterproofed.

Timberwork

Most of the original timberwork, in a good state of repair and free from insect attack, was treated and recuperated. The pieces were stripped and filed by hand, and where necessary a Xilamon treatment was applied and then the whole piece was consolidated with Paraloid B-72, an acrylic resin that has been used in the restoration of works of art since the nineteen fifties as an adhesive for consolidation and varnish. Numerous tests indicate that it is the most stable resin for this type of intervention and the essays and tests performed allowed us to choose the degree of concentration and the most suitable solvent for the success of the operation, permitting an adequate penetration of the resin and a sufficient consolidation of the object, using low concentrations and repeating the operation several times.

Roof of the market

The existing system used for the roof of Colón Market comprised three 40 x 40 cm asbestos cement hips at each side with two chamfered edges, secured with button hooks at one end and wires at the top. The original asbestos cement pieces were in very poor condition and they were not suitably overlapping to prevent water leaking in. During the examination of the roof, warping of the pieces in the South-Southeast facade due to solar radiation was detected: insufficient overlapping for the existing hips; a need for complementary waterproofing; insufficient superposition of pieces; holes caused by the button hook system; broken protruding crowns; difficult maintenance by overlapping due to replacement of pieces (pieces nailed back on and superficial mastic applied. As regards laying and fixing, the pieces were not prepared to be fixed with wires; chipped perforations and pieces broken while being secured; deficient adherence (since the movement of the plaques was not curtailed); and insufficient support in the crossbeams (angular edge) that needed to be modified so as to be able to screw or nail them on. The condition of the pieces was improved by means of a material that guaranteed both their functionality and their aesthetic

qualities because of their emblematic scale appearance, their colour and their texture. “Eternit” asbestos cement plaques were used, similar to the existing ones as regards size and texture and guaranteeing the stability of the system thanks to a new method for applying the pieces that ensured that they were properly overlapping and watertight.



Javier Ibargüen

THE CISTERCIAN MONASTERY OF NUESTRA SEÑORA DE RUEDA & ITS RESTORATION

When we started to work on the Cistercian monastery of Rueda fourteen years ago, we came up against a distressing image of neglect common in many monasteries in Spain since the disentanglement that took place in the early 19th century, and aggravated in this case because of its physical isolation in the municipality of Sástago, Zaragoza, to which it belongs although it is several kilometres away from it. The absolute lack of infrastructures, services and any kind of private or institutional attention had caused it to fall into oblivion except in specialised circles. But we also had the sensation from the outset that, underneath the apparently irreversible state of ruin, there lay an exceptional Cistercian monastery one of whose virtues might well be the fact that it had been abandoned for over one hundred and fifty years. Indeed one of the most outstanding features of this monastic order is that its monasteries were built according to a strict design, with the spaces necessary for the white monks' lives. In the case of Rueda, the fact that its constructions had not been used since had preserved its integrity, and only the elements built over them throughout the monastery's history, made out of poorer materials than the robust ashlar of the medieval fabric, were in a state of ruin, a situation which partly concealed not only one of the best conserved monuments of the 13th century but probably the Cistercian monastery whose medieval design most clearly shows the layout of the rooms and the hydraulic infrastructures used by the monks.

The first restoration works were very poor because of the scant means we had at our disposal and year after year we saw ruin advance at the same pace as restoration in some zones. The determined stance of the Aragón Government after it had purchased the whole monastery in 1998 revived the process thanks to which it was possible last year to inaugurate the works performed to date, so that practically all the medieval rooms can now be visited and the buildings have been turned into a hostel in keeping with their monumental category.

HISTORICAL BACKGROUND

Rueda monastery is one of 59 monasteries for monks built in Spain in the Middle Ages by the Cistercian order, founded some 900 years earlier by St Robert of Molesme and several of his followers, whom, as a reaction to the relaxed observance of the strict Benedictine monastic lifestyle, retreated to the quagmires of Cîteaux in Burgundy, France. They were joined by the Englishman Stephen Harding, who summed up the ideas of this reformation in the Charity Charter. But the real force behind the Cistercian order was St Bernard, under whom the order underwent a period of great expansion, so that on his death in 1153, there were 343 monasteries for monks, 742 at the end of the Middle Ages, and over 700 convents for nuns.

La Ferté, Pontigny, Morimond and Clairvaux were the four abbeys from which new communities sprang up. The monastery at Fitero is considered to be the first one founded in Spain, around 1140. In Aragón, monasteries for monks were Veruela, Piedra, Rueda and Santa Fe. The origin of Rueda monastery dates from 1152, with the foundation of Nuestra Señora de Saltz Abbey by the monks from Gimont, who in turn came from the head house at Morimond. In 1162, the abbey at Juncería was founded on donated lands in Burjazud (Villanueva de Gállego), immediately before Rueda.

In 1182, King Alfonso II donated the lands and castle of Escatrón, on the banks of the Ebro River, for a monastery to be built to house the Juncería monks. On completion of San Pedro Chapel in 1202, Rueda

monastery could be considered inaugurated. Building took place throughout the 13th and 14th centuries, and the basic medieval part was made around 1248 and included all the rooms of the architectonic organisation of a Cistercian monastery, where the rooms are arranged in canonical order around the cloister, with the only variety in symmetry in relation to the church. In this way, the following were built: the church, the sacristy, the cloister, the *armarium*, the chapter room, the locutory, the passage leading to the orchard, the *scriptorium*, the calefactory, the refectory, the kitchen and the granary, in this case a little removed from its usual location in the west wing of the cloister. On top of the chapter room lies the medieval dormitory, with its two staircases, one leading to the church and the other to the cloister.

At the end of the 14th century, the monastery entered into a period of decadence that lasted until 1558, when, on the appointment of Brother Miguel Rubio and with the restructuring of the monastery's economy, important renovations were initiated and continued throughout the 16th and 17th centuries, with the addition of the monumental Plaza de San Pedro within the medieval monastery, the new abbot's palace, the porticoed gallery that connected the abbot's palace to the medieval buildings and the hostel. At the end of this period, the large dormitory nave was built on the other side of the medieval complex, connected to the cloister by an open passage in the space occupied by the calefactory.

The monastery's hydraulic infrastructures, built at the beginning, are a very interesting feature not only because they are unique but because of their excellent state of conservation. They start with the water wheel built in the Ebro River to divert water along a canal to a chain pump that worked until the first decades of the 20th century and probably gave the monastery its name*. This pump poured water from its scoops into the ashlar aqueduct, from where it was distributed around the monastery through underground canals.

The expulsion of the monks from Rueda Monastery took place when the minister Mendizábal brought out the disentailment

decree on 16th November 1835, at a time when the community was made up of thirty monks, twenty lay brothers and twenty servants. The grounds of the monastery were sold at several auctions, and the State received a total of 6,137,800 *reales de vellón*** for it all. The purchaser of the main part, called "the Rueda farm", was Esteban Lacasa, with the lawyer Francisco Royo y Segura as a figurehead who bought the property from him a few months later.

In 1929 the property was purchased by the company Electro Metalúrgica del Ebro, which used it exclusively for agricultural purposes. On 11th December 1990, the postmedieval building and the inner orchard were handed over to the Diputación General de Aragón, although this conveyance was not entered in the Civil Register until 1998. The medieval zone of the monastery, which still belonged to the State, was taken over by the Aragón Government shortly afterwards, on 4th September 1998.

Very few works were carried out on the monastery between the disentailment and the drawing up of the project; among the most important of these was the reconstruction of the roof on the medieval dormitory, with the elimination of the remains of the Baroque vault built in the 17th century, restoring in brick the form of the original diaphragm arches. But the most important of all were the works supervised by the architect Fernando Chueca Goitia for the Fine Arts Department, starting in 1970. The main purpose of these works was to repair the church, whose roof had collapsed as 80% of the cladding had disappeared and the ribs and keystones were in very poor condition. The vaults were reconstructed, the foundations reinforced and the flooring replaced. To build the new roof with concrete trusses, the side walls were thickened forming two single slopes. General repairs were carried out on the vaults and walls of the cloister and a concrete floor was laid in the galleries and central courtyard.

Later, in 1989 after the Spanish Autonomous Communities has come into being, some tasks were performed in the church by the General Heritage Department to consolidate the chancel, spoilt by a door

into an old sacristy that had been added on, and to make the alabaster windows and the door into the church.

RESTORATION

The intention of the Master Plan was, in principle, to schedule the restoration works thanks to an initial general diagnosis. But lack of funds prevented the long process of restoring the monument from being carried out with the necessary decision and expediency. The works performed in the early years concentrated on priority tasks such as the restoration and refurbishment of the reception area of the monastery located in the abbot's palace, adding toilets and provisional infrastructures. At the same time, rubble was removed from other areas and archaeological and petrological tests were performed.

The first excavations revealed the medieval hydraulic infrastructure of the monastery, which consisted basically of a main water distribution channel that ran through the kitchen, refectory, calefactory and monks' common room. Pressure pipes were also discovered, mainly the lead pipe inserted in an ashlar base that ends in the fountain pavilion giving onto the orchard. An important fact was the appearance of an architectural probe in the old calefactory vault, concealed over a plastered brick vault underneath the modern calefactory. This room was believed to have disappeared in the refurbishment in which the passage connecting the cloister to the new Baroque dormitories was made. Its discovery completed the canonical design of the Cistercian monastery with an element that has been eliminated from most Cistercian monasteries to build a staircase leading up to a new floor added to the cloister. Among the initial priorities, the concrete floor laid in the cloister in the nineteen seventies was removed, as it prevented the soil from breathing, thus causing damp to accumulate by capillarity in the sandstone tracery. In the years that followed, the works continued with the restoration of parts of the chapter room, the refectory roof and interior and the

* *Rueda* in Spanish means "wheel" [N. de la T.]

** Ancient Spanish copper coin [N. de la T.]

cloister terraces. When the works were renewed, it was decided to repair two important elements in grave jeopardy: the tower and the granary.

The Mudejar Tower

The octagonal Mudejar tower, added to the south chapel in the chancel in the 14th century, has an unusual belfry with 32 little pointed openings over eight large mullioned windows, and was in serious danger after the belfry roof and floor had collapsed, causing severe damage to the roof around it when its cornice fell.

During the restoration, among many other tasks, the original mullioned bays of the belfry, which had been covered over in the important aesthetic transformation of the tower involving the addition of a body in the late 18th century, were recuperated.

The Granary

In Rueda, the granary, a space dedicated to storing food, is a free-standing structure located in the south of the complex near the kitchen. It consists of two storeys with a rectangular floor plan. The first storey, built entirely of ashlars, is made up of two parallel naves with five sections separated by polygonal pillars and covered by groined vaulting with large bead moulding. Its architectural characteristics are very similar to those of the monks' common room or *scriptorium*, another of the oldest rooms in the monastery, located in the chapter room wing of the cloister. The second storey has brick in its interior fabric. It is covered by a timber roof frame on brick diaphragm arches. In the south bay, there is a cut in the fabric with a wall containing two arches, leaving a back space for drying food that must have been uncovered originally.

The roof of the second floor of the granary had collapsed, so it was necessary to rebuild its wooden structure on diaphragm arches. Downstairs the mud accumulated during the long period of neglect was cleared away to reveal the rock face and a network of little channels and remains of structures used to make wine and oil. Two large barns added after the disentanglement of the monastery were demolished;

underneath, the pilasters of the first two sections were found and a platform flooring was created on the areas free from remains.

In 1999 a global project for the restoration of the medieval part of the monastery was drawn up, including all its rooms, and of the monumental Plaza de San Pedro outside, which completed the restoration and refurbishment for the Hospedería de Aragón in the abbot's palace and the *Corredor* building, which I shall discuss below.

The Church

The church, with its canonical east-west orientation, closes the whole north side of the medieval monastery buildings. The floor plan consists of three five-section naves, has no transept and the chapels that serve as a chancel to the naves have a straight front; in other words, it corresponds to the most austere models of Cistercian architecture.

The illumination of the chancel is by means of round arched windows, which were closed over to house the magnificent alabaster altarpiece made by Master Esteban and Domingo Borunda in the first decade of the 17th century, situated since the 19th century in the parish church of Escatrón, which had two side doors leading into a sacristy that no longer exists that was built behind the chancel during the same period.

In the walls over the roof of the lateral naves there is a series of skylights and rose windows with a system of translucent alabaster and plaster lattices, some Mudejar and some Gothic, with 14th and 15th century motifs. All the sections of the church are covered with simple fan vaulting. Most of the structural system (cruciform pillars with semicolumns attached, ribs and most of the walls) are made with ashlars, whereas most of the cladding is brick. This material is generally used practically from the chancel at window level.

According to the monastery's *Lumen Domus*, the current church was begun around 1225 and designed by the architect Friar Gil Rubio. It was consecrated in 1238, when the chancel zone was completed and the design of the whole building had been started, and in 1412

money was still being allotted to pay for the works, with the contribution of the House of Híjar, to judge from the coats of arms in the second last section of the church. Some years earlier the tombs of Don Pedro Fernández de Híjar's wives had been made and his own was completed in 1402.

The Santo Cristo Chapel, located opposite the entrance into the cloister, is the only medieval one, and it can be related to the burial of Aragón Justice Juan Gil Tarín († 1290), which would mean it was one of the last tasks carried out in the 13th century. The other postmedieval chapels in the church are San Bernardo Chapel and Santa Bárbara Chapel. The former, together with the third section at the end, is dedicated to Saint Bernard and was built during Abbot Redorad's second rule, between 1652 and 1657; it has a square floor plan and is covered with a lantern cupola decorated with stucco.

On the other side of Santo Cristo Chapel, near the chancel, is Santa Bárbara Chapel, commissioned by Abbot B. Capilla during his rule, which started in 1712, including the golden altarpiece. This Baroque chapel had a lantern, which is no longer in existence, and was profusely decorated with stucco, of which a few old sections still remain.

After the works performed by Fernando Chueca on the church, the restoration tasks to be carried out focused on its completion and resolving the modification made at that time by building a continuous pitched gable roof, for which the lateral naves had been expanded, thus concealing the Gothic and Mudejar windows in the central nave and covering their eaves with bricks.

In consequence, the tiered roof has been recuperated and the metal roof and expansion of the walls have been eliminated to restore the illumination of the nave. The ashlar front in the chancel, which had been mutilated by former works, has been completed. In the interior, as in all the other spaces, the stone walls were treated, the sandstone flooring and carpentry was repaired and the decorative elements were restored. Finally illumination was provided by lights embedded in the floor, a criterion applied to the whole monastery.

The cladding of walls and vaults not made of ashlar and that were completely plastered in olden times and the reconstructions carried out by Chueca and finished in cement mortar were all covered with one coat of mortar, following the criterion applied to all the walls of the monastery that were restored.

The Sacristy

The sacristy is next to the chancel on the epistle side. It has two separate spaces; in the first place, the old sacristy, with a rectangular floor plan and a pointed barrel vault, altered in the successive refurbishment works. It has plaster ornamentation from a later date with pilasters with striated shafts, Corinthian capitals and a dog-toothed fascia. There are traces of important settling in the ashlar near the chancel wall, because of overloading produced when the tower was built on top of the apsidal chapel beside the church. Near the entrance there are four ashlar niche cupboards and opposite the entrance are the remains of the vaulted niche where the holy water font used to be. The other room is an oratory built at a later date, taking advantage of the gap between the sacristy and the projection of the chancel in the central nave of the church. It has a barrel vault with sgraffito stucco on a grey background.

Once the initial dimensions had been recovered by removing the brick prop wall and it had been reinforced at the top, the work performed on the sacristy and its oratory was a compromise between the badly deteriorated decoration and superposed refurbishment, maintaining the elements conserved and showing the evolution of the spaces. The arcsofia and the little splayed window in the sacristy facade that had been covered over were recuperated.

The Cloister

The cloister maintains the usual layout of Cistercian monasteries, attached to the nave of the church and giving access to the main rooms, in such a way that it was an element that articulated the monks' lives. Its apparent uniformity contrasts with the reality of the analysis of the building's evolution, which can clearly be seen from the exterior arcade.

The cloister galleries were built according to the functional necessities of the monastery. Thus the chapel wing, fundamental to get to the chapter room, the *scriptorium*, etc., with a prolongation into the toilets and the refectory, was the first part to be built, completed in the mid 13th century. Then the Collation side was built beside the church, with a function of liturgical organisation.

The completion of the west nave of the cloister in the second half of the 14th century suggests that building was interrupted during the archaeological excavation on discovering a planked plaster wall running from north to south parallel to the nave probably as a provisional fence to permit life to go on in the cloister until the works were completed.

The decoration and moulding on the different naves of the cloister are a compendium of decorative evolution throughout the Middle Ages, from motifs in Romanesque tradition with elements of Islamic origin to an evolution of Gothic decoration from the earliest motifs until the 14th century. Nevertheless, others are repeated, endowing the ensemble with a certain internal unity, such as the diamond fret on the cloister walls or the sober moulding on the vault ribs.

There was a second storey in the cloister, of which the only remaining traces are the round arched gallery giving on to the west plaza and the remnants of putlog holes in the dormitory that was built when the archbishop of Zaragoza, Don Alonso de Aragón (U 1520) was abbot. Around the same time the cloister arcades must have been closed with ashlar partitions up to the capitals and translucent alabaster in the arches, skylights and tracery, some remains of which can still be found in the west wing. The rim and top of a barrel vault tank stand in the centre of the cloister. This was the first water collecting system in the monastery, before the complex hydraulic network that we can see today was built and it was also built before the *lavatorium* pavilion, whose fabric blocked the pipes into the tank.

After several partial repairs in the cloister such as removing the paving, laying the central garden, restoring the parapet and upstairs terrace, the most delicate tasks

were performed on the artistic elements: the numerous capitals, the tracery, the keystones in the vaults, the portals, the remains of mural paintings and postmedieval plaster decoration by the Al-Mulk team of specialists.

The Lavatorium

This is an essential element in the cloister, located opposite the refectory. The one in Rueda Monastery is very beautiful and well proportioned and although the central fountain is missing the excavation carried out revealed a most interesting set of pipes on different levels, whose position was worth leaving visible.

For that reason and taking into account the importance of this space and the sound of water from the fountain, we decided to build a new fountain in a plain design, which, resting on the floor beneath, holds a glass platform running around the perimeter of the pavilion on which visitors can walk and see the old hydraulic infrastructure.

The Armarium

Occupying the first section of the chapter wing in the cloister, behind the sacristy, we find the *armarium*, a little space used as the monastery's library. It was altered in the 17th century and turned into a chapel, and its pointed arcsofia-type vault was transformed into a semicircular vault, whose intrados still bears some sgraffito, which was restored during the works.

The Chapter Room

Next comes the chapter room, a space where the "chapter" meeting or assembly of the whole community called by the abbot took place every day after prime. All important events took place here: appointments, ordinations, etc., so that it was usually a space with especially refined architectural features. The facade of Rueda chapter room giving on to the cloister is particularly rich, and follows the traditional design of a central doorway and two lateral windows, from the separations between which spring the corbels of the cloister ribs, finished in *cul-de-lampe*.

The floor plan is rectangular and divided into six sections covered by groined vaulting, with two central octagonal base

pillars on which rest the eight little columns of the shaft, which are a prolongation of the vault ribs. On the east wall there are three long narrow windows with the same decorative motifs as the portal although plainer.

This room, like the other rooms in the chapter wing, had been affected by the structural problems arising as a result of the collapse of the east wall of the dormitory upstairs, giving on to the old graveyard. After the wall had been reinforced by loading the “kidneys” of the diaphragm arches in the dormitory and trussing the flooring, the displacement of the voussoirs in the arches and the many cracks in the surfaces of the vault were corrected. The rest of the steps taken were isolated items like the replacement of parts of the perimetral ashlar benches and the same general items as in all the rooms, such as laying the flooring and putting alabaster on the windows, the illumination and the sandstone treatment, consisting of repairing the joints, cleaning, consolidation and protection, after the preliminary petrological studies and essays had been carried out.

The Staircase

Behind the chapter room there are three small elongated spaces, also part of the usual layout of a Cistercian monastery. The stairs connecting the dormitory with the cloister is the closest of these; in Rueda Monastery it had been eliminated to make a chapel, although its initial design could clearly be seen from marks that still existed on the lateral walls and the central doorway in the cloister arcade situated opposite its axis. The original layout of the whole staircase appeared when probes were performed in the dormitory.

The Locutory

Then comes the locutory, where the prior, the second authority in the monastery, allotted daily tasks to the monks. It occupies all the bay of the chapter room and is covered by double groined vaulting and although there used to be a window in the east wall there is now a door leading to the orchard outside. On the lateral wall is the prison door and the entrance to a little room under the stairs leading to the dormitory upstairs.

The Passage to the Orchard

The passage to the orchard is a narrow corridor parallel to the chapter room, covered with a pointed barrel vault starting with a corbel. Near the entrance from the cloister and to one side is the entrance to the monks’ common room. Under its rectangular shape runs the lead pressure pipe that supplied the fountain pavilion with water, whose two ends have been left visible by means of glass paving embedded in the floor.

The Scriptorium

The monks’ common room or *scriptorium* closes the east wing of the cloister. With similar proportions to the chapter room and with two central pillar also, it is covered by six groined vaults. Its conception is older than the former, but the fact that it was built during the same construction phase suggests that the differences are due to the different use of each room. The three windows here are unadorned, although they are larger than those in the chapter room. Traces of polychromy are conserved on vaults and capitals. General water piping appears for the first time in this room, although filled in and with the paving stones out of place. In the course of the restoration works the filling was removed and a diversion with floodgates to the hypothetical latrines nearby was found. Because of the interest of these conduits perfectly fashioned out of ashlar, they were placed under glass so that they could be seen by visitors. In the restoration of this room, as well as the steps taken in all the other rooms, the reddish patina of paint in the vaults was conserved.

The Calefactory

The calefactory is the first room in the refectory gallery, with a rectangular floor plan, covered with an ashlar barrel vault with an intermediate arch rib. In the west wall is the fireplace with a large two-flue ashlar chimney. The medieval calefactory of Rueda Monastery was done away with to make a passageway into the new dormitories built in the 17th century, so the walls of the room are open at the sides. As a result of its elimination, on top of the medieval calefactory, occupying the same

surface and connected to the dormitory, a new calefactory was built, crowned with a small dome with a fireplace and chimney in the centre. The restoration aimed to make the original space legible while compatible with the alterations practised, especially the passageway to the Baroque dormitories or noviciate.

The Refectory

The refectory is one of the most interesting rooms in Rueda Monastery. Its solidity and purity of line are similar to Santa María de Huerta (built later than Rueda but altered afterwards to increase its height) and Alcobaça in Portugal. The monks’ refectory is a large room transversal to the cloister, with a rectangular floor plan, illuminated by two rose windows at the ends and large windows at the sides. It has a barrel vault like the adjoining rooms and it is divided into six sections by means of five transverse arches springing from rolled corbels with large bead moulding ending in *cul-de-lampe*, whose height is reduced today by the timber backs of the perimetral seats installed after the room had originally been designed.

The pulpit for reading at mealtimes is embedded in the first two sections of the west wall and boasts exceptional quality and elegance. The stairs run behind the rampant arches supported by capitals adorned with plant motifs. Behind the pulpit, with an octagonal floor plan, embedded and leaning on a corbel, there is a little window to provide light for the reader.

The refectory door is a slightly pointed arch with a rich splay, whose archivolt bears similar decoration to that of the chapter room, with foiled arches and a diamond fret. The originality of the two-piece carved stone skylight in the cloister facade is also worth mentioning. The main pipe network runs transversally from the calefactory to the kitchen; in the central area it collects the water from the *lavatorium*, which helps clean it. The refectory was at the beginning of the unroofed works to be restored, full of rubble from the collapse of constructions added to the ashlar vault and overrun with deep-rooted weeds. Therefore priority was given to reconstructing the double-pitch roof and finishing the two end walls;

specific tasks performed in the interior of this room were the opening up of windows that had been closed over and the sealing of cracks in the wooden sleepers left by the now missing perimetral benches.

The Kitchen

The last room in the refectory wing is the kitchen. The refurbishment of all the domestic spaces in the monastery had caused it to be eliminated and divisions and alterations to be made in its interior, which had fallen into ruin from neglect because they had been made with less consistent materials like pisé-de-terre and brick. Once the volume of its vault had been restored, the characteristics of the original space were clearly defined: a pointed barrel vault springing from a continuous corbel, similar to the one in the calefactory and the refectory, transversal to the latter, and in this case with two intermediate projecting rib arches on corbels with roll moulding. The chimney and fireplace must have been situated in the east wall beside the refectory, with the ventilation pipes embedded in the wall. The last section of the main pipe system before it turns towards the granary and the Ebro River can again be seen in the ground.

The Dormitory

The dormitory is a big room that occupies the whole upper storey over the chapter room. It has two entrances, according to the custom in all Cistercian monasteries, one connecting it directly with the cloister and the other leading to the church for the nightly prayers. The abbot used to have an independent room and in Rueda Monastery it is a little square room adjoining the dormitory, situated over the sacristy, whose volume has been recuperated and covered with a plain flat roof.

The dormitory underwent an important transformation when its original configuration of ashlar diaphragm arches was transformed into a Baroque segmental vault. After this fell into ruin when the monastery was abandoned, the arches of the previous structure were reconstructed out of brick in the mid 20th century. This caused a considerable overhang in the side wall giving on to the orchard, which they

attempted to stop by adding large brick buttresses, which not only failed to solve the structural problem but had a very negative effect on the configuration of the facade and its proportions.

In the restoration of the roof the diaphragm arches were reinforced to guarantee their structural function, maintaining the characteristics of the original space and conserving the original girders of the timber roof. To counteract the collapse mentioned above caused by the thrusts of the dormitory arches, the lower vaults were also trussed.

So, after the many mishaps suffered by this room, the refurbishment strove to solve the structural problems and restore authenticity to the conception of this space, whose main feature is the sequence of diaphragm arches, the rhythm of the little splayed windows and the wooden ceiling.

The Hydraulic Infrastructures

The hydraulic infrastructures in the exterior, which start at the Ebro diversion dam and whose principal elements are the chain pump and the aqueduct, conserved practically all the ashlar fabric, although they had been so sorely neglected that some large trees had taken root among the big sandstone slabs.

The whole structure of the chain pump is intact, as is the magnificent aqueduct, both sides of whose partly concealed pointed arches have been cleared. To restore this it was necessary first to dismantle some of the ashlars and get rid of the vegetable elements and then put them back in place. The area surrounding the chain pump, of whose last wheel, one of the largest in the peninsula with its sixteen metre diameter, some photographs are conserved, was cleared of mud from the river.

The diversion dam caused several islands to form in front of the monastery, creating a landscape with great possibilities for leisure activities and navigation, as well as the traditional fishing, very important in this area at the end of the Mequinenza Dam. The idea is to replace the wheel of the chain pump in the future, but this will require complementary work on the whole surrounding area involving diversion of the water in order to clean the canal from the dam, locate mechanical floodgates, etc.

The Abbot's Palace and The Corredor Building

The restoration of the abbot's palace and the *Corredor* building as a hostel was a crucial item in organising the management of the monument and its services. The existence of an abbot's palace or residence in Rueda Monastery is mentioned in documents dating from the year 1337, when the chapter was not held in the beautiful room in the cloister. In 1412 the abbot's house was in a poor state of repair, according to the abbot's report to Pope Benedict XIII in his application for funds to restore it. This palace underwent several refurbishment works from the 17th century onwards, when what is known as Puerta Real (Royal Gate) was added in the north, whose lodge and frontispiece had been started under the rule of Abbot Huarte when the traveller Labaña visited Rueda in 1611.

The characteristics mainly of the ground and first floors of the abbot's palace were adapted for all the normal uses of a unique hotel establishment: the entrance hall, the royal staircase, the first-floor rooms, the Baroque oratory, the room with alabaster windows and the wine cellar with huge barrels on the ground floor most attractively house the different uses of reception, lounges, bar-cum-restaurant, etc. without any need to change the layout.

The part over the hall, the old *Casa del Cillero* (House of the granary keeper or monk in charge of monastery supplies), has magnificent bedrooms that have been turned into suites. Complementary facilities such as a conference room have been installed in the attic of this building.

The Porticoed Gallery Building

The porticoed gallery building is a monumental porticoed two-storey building on the south side of the above mentioned San Pedro Plaza, leading from the abbot's palace to the artistic entrance gate into the medieval cloister at the opposite side. Only the ground floor wall of the south bay had been built and a provisional construction had been erected on the first floor to use as living quarters for the employees of the company that owned this part of the monastery.

This unfinished character of the south facade of the monastery made it specially suitable for the installation of hotel rooms. Its orientation is magnificent, with a view of the orchard garden and the Ebro River; the gallery provides access to the bedrooms and affords the best possible view of San Pedro Plaza. Rooms are laid out in a row on two levels with a vertical communication nucleus in the little courtyard. A service staircase and different service rooms occupy the opposite end. The tasks performed included the installation of infrastructures and the conditioning of the exterior spaces, whose gardens and paths revolve around the imposing aqueduct. In front of the *Corredor* building a large platform was created over the semi-basement installation building that can be used for outdoor events.

San Pedro Plaza

Along with many other restoration tasks on all the medieval part of the monastery that we shall not go into in this general description, was the urbanisation of San Pedro Plaza, the space that articulates the different buildings in a new concept, generated in the Modern Age. In the paving, the tray-like central zone is differentiated from the perimetral area, thus solving the problem of the unevenness of the ground and creating a central fountain that orders circulation and provides the sound of running water. A differentiated area was also created outside the facade of the cloister and church, with tree-lined earth paving, integrating the excavated moat with archaeological remains, according to the directions of the General Heritage Department.

The works performed to date have finally made it possible to open the medieval monastery of Nuestra Señora de Rueda to the public for guided tours. This and the inauguration of the Hospedería de Aragón permits visitors to enjoy a site that boasts Cistercian architecture in all its purity, recuperating its historical role as the agglutinating factor of a large region, following the model of territorial colonisation of monasteries in the Middle Ages.

With adequate conditions for the management of the monument, other minor aspects can be dealt with in the near

future to increase its value even more, such as the restoration of the oil and flour mills, the vaulted underground cold room, the nearby hermitage, the river area, etc., and particularly the installation of a great Ebro museum in the Baroque dormitories and noviciate currently in ruins, to exhibit all sorts of sailing vessels, tools and machinery related to the history of this great river, the reason behind the monastery's location. This will be a complement to the living museum constituted by the natural setting of the monastery on the Ebro River, the diversion dam, the chain pump, the aqueduct and all the medieval hydraulic infrastructures built by the monks.



Camilla Mileto and Fernando Vegas

CULTURAL IDENTITY & BUILT LANDSCAPE. PILOT PROJECT FOR THE RESTORATION OF TRADITIONAL HOUSES IN RINCÓN DE ADEMÚZ (VALENCIA)

Traditional architecture in Rincón de Ademuz, a parish in the province of Valencia situated between Teruel and Cuenca, is an example of built rural heritage in danger of disappearing. The isolation of the parish, surrounded by mountains, has led to massive emigration of the inhabitants to large cities. But thanks to this circumstance, popular architecture has undergone few alterations and, in spite of its precarious state at the present time, conserves most of the characteristics of its particular traditional building style.

The local residents traditionally relate their grandparents' dwellings with the poverty of the past. This mental association has brought about the neglect, demolition and subsequent building on top of old sites to produce modern houses with completely different materials, techniques, composition and colour scheme from the historical building tradition of the area.

International Workshops on Traditional Architecture

In view of this situation, traditional architecture has been under examination since 1996 in eight international

workshops with the participation of students and lecturers from some twenty universities from all over the world, where composition, morphology, construction, costs, etc. were studied. Most of the students were reading architecture, although some researchers from other disciplines also participated, for example, geology, anthropology, construction engineering, structures... These workshops were mainly funded by the Leader II Programme of the Economic European Union, the Polytechnic University of Valencia and the local group ADIRA (Association for the Integral Development of Rincón de Ademuz), made up of local residents who refuse to resign themselves to the dilapidation of their homeland.

Part of this research has been published in a book titled *Memoria construida. La arquitectura tradicional del Rincón de Ademuz* (Built Memory. Traditional Architecture of Rincón de Ademuz), with illustrations by the student participants and texts by Fernando Vegas, Camilla Mileto and Marina Zucolotto. The drawings and texts in this book describe the valuable building techniques of the area in order to facilitate the conservation and restoration of traditional architecture in Rincón de Ademuz. The diffusion of this book among the local people has served to enhance the respect they feel for these vernacular constructions.

Disorientation in the Sphere of Restoration in this Area

Until the present day, the usual procedure regarding these humble rural constructions consisted of knocking them down and building brand new houses on top, using completely different materials, techniques, designs and colour schemes from their natural and built surroundings. In other cases, when the owners had saved up a certain amount of money, they had the interior and exterior of the facades plastered and left the gloomy grey of the cement unpainted as a way of tacitly their neighbours that their house was no longer clad in the poverty of traditional architecture of times gone by but had moved on into the new era of progress and development.

In recent years, a new tendency towards the recuperation of these traditional dwellings has been detected, but the abandonment of traditional techniques, ignorance of the real behaviour of the structure of these buildings and reluctance to spend an unwarranted amount of money in having the houses properly restored put a damper on the owners' newly acquired sensibility regarding their ancestors' homes.

It is evident that there is a psychological barrier dictated by the custom of the development period that holds back the recuperation of traditional houses in the parish of Rincón de Ademuz and favours their disappearance. It is common to come up against an attitude of underestimation or contempt for these traditional houses, apparently poor and unappreciated but older than most modern buildings made of reinforced concrete will ever survive to become in the future.

The greatest problem resides in the disorientation that characterises this new tendency to recuperate these traditional dwellings, as there are no real guidelines or technical know-how to use as a basis of possibilities for the respectful restoration of these houses, without necessarily having to use techniques and materials that are incompatible with the existing buildings and their natural surroundings. Some local masons and builders still remember the traditional techniques of the area, but the market demands the use of reinforced concrete and aluminium joinery rather than a building system that would help perpetuate traditional methods for new generations.

The difficulties that any professional builder comes up against when attempting to draw up a budget for restoration works due to the absence of an accurate price list in this field is even greater in Rincón de Ademuz, where undervaluation of traditional houses goes hand in hand with ignorance of the units, prices and real performance of restoration that constitute any budget.

This research attempted to solve this situation. In the first place, the traditional building techniques of the area were investigated and the drawings resulting from this research were published as a guide for local residents. Then a

restoration project was drawn up as carefully as possible for an anonymous house with a view to studying the possibilities of a new application of the old techniques or at least of the same constructional logic, in order to demonstrate that the recuperation of traditional dwellings is both possible and economically viable today.

A Specific Study Case: a Restoration Project for a Rural Dwelling

For that reason, a pilot project was drawn up for the restoration of traditional houses in Rincón de Ademuz: an anonymous, humble, rural dwelling, with many of the characteristics shared by other houses, ordinary building features, the morphology, layout and, without a shadow of a doubt, the usual list of pathologies suffered by these constructions.

This pilot project attempts to apply all the knowledge gleaned by this research group at Valencia Polytechnic University over the years to one particular case. The idea was to perform restoration works that would respect not only the existing building but the history of vernacular building techniques in the region.

Techniques both physically and conceptually compatible with existing building tradition were investigated and the technology concealed within the vernacular solutions were reinterpreted to carry out modern restoration works. These points were borne in mind for both the graphic information and the preparation of the report and budget.

This abandoned house, like many other rural houses, needed new wiring, plumbing and heating. All these requirements do not involve a loss of harmony or spirit for these traditional houses, but on the contrary, the project strives to create a balance in keeping with current conditions. In order to achieve these objectives, the following steps were to be taken:

Steps Envisaged in the Project

1. Application of newly reinterpreted local traditional restoration techniques, some examples of which are listed below:

- Dry light consolidation of frameworks especially conceived for the little log frames and *cindrias* (vaults) typical of Rincón de Ademuz

- Possible insertion of tie beams between the gypsum structural piers to provide stability

- Use of traditional local mortars,

- consisting of black gypsum and local sand
- Use of transpiring lime mortars for the masonry fabrics and floors in direct contact with the ground

- Use of mud, straw and lime mortar for the joints of the roof tiles, the best system to avoid bursting as a result of freezing

- Rebonding of the loose mortar fabrics and rejointing with hydraulic lime mortars

- Recuperation of the woven reed roofs

- Recuperation of timber girders and logs by immersion, painting and injection of woodworm repellents

- Recuperation of wooden carpentry by sanding, stripping and applying woodworm repellents

- Recomposition of the missing vaults in the framework using the traditional *cindriales* (plank moulding)

- Use of natural traditional parges and cladding of local mortar composed of black gypsum, clayey sand and slag

- Respectful treatment of the existing facades, carefully inserting contemporary installations

- Restoration of furniture and utensils found in the house

2. Preparation of a detailed work diary containing observations about the experience and the techniques applied, assessing the performance of the different units, describing the composition of the different mortars and their results, analysing samples of the traditional mortars, showing photographs of the building process and the different traditional crafts used in the restoration and enumerating the local building jargon.

3. The information resulting from the work experience and the analysis of the samples taken from these traditional mortars will be classified as a sort of index of units and prices related with architectural restoration in the region. Comparative tables of prices of these different restoration units will be drawn up

in such a way that it will be easy for the local people to understand.

4. Plans will also be drawn up after the works to show their final state and the variations as regards the initial project, with notes on the changes made

explaining the reasons that justified them during the decision-taking process.

5. This document and the graphic information in the project plans, the photographs of the progress of the works process, the preparation of the plans after the works and the photographs of the finished product will be published as a restoration manual for local residents, masons and builders.

6. According to the project, a large section of the restored house has been reserved as an ethnological museum to exhibit the furnishings and utensils, with graphic panels documenting the restoration process, with a view to arousing interest in the visitors about their heritage and enticing them to have their own family homes restored.

7. The intention is to present the book entitled *Guía de la Restauración en el Rincón de Ademuz* (Restoration Guide for Rincón de Ademuz) in the surrounding towns and villages at an event including the exhibition of the panels depicting the restoration of the vernacular house, lectures and talks addressed to residents, builders, masons and craftsmen.

8. Finally, this experience could lead to the creation of an office to provide information and technical advice for the refurbishment of vernacular houses in the area, with a view to orienting owners, masons, building companies and craftsmen about the advantages and feasibility of recuperating the traditional houses in the area.

Comparative Diagrams between the New Building and the Restoration

The study carried out for this pilot restoration project made it possible to establish an economic comparison with newly-built houses, in order to reach conclusions about the wisdom of conserving these traditional houses suitably modernised, not only from a personal, cultural, sentimental or romantic viewpoint, but also for the economic development of the parish.

In the tables, we can see not only the difference between the prices of new and restored buildings, but the economic consequences in the area where the restoration is carried out. Two types of tables have been drawn up: one reflecting

the percentages of the elements in the total cost (labour, machinery, materials, indirect and other costs) and another showing the total works in Euro.

The lack of any sort of industrial production is a token of the poverty and isolation of Rincón de Ademuz. Only the money spent on labour and local materials will remain in the parish. Any other money will go to the place the machinery or already elaborated materials come from. The first tables on the left show how much of the money spent on the building process will remain in the area. We can see that most of the money spent in the restoration of a house is for labour, whereas for a new house a great deal of machinery and ready-made materials are brought in from outside, which involves money that will not remain in the area. That means that restoring a house of this kind in a poor, out-of-the-way parish involves investing most of the money used in that parish, apart from promoting local crafts and traditional building techniques.

The tables also show the total amount of work in Euro for both a new building and a refurbished one. In refurbishment works, the house already exists, so that most of the work required for a new building is already present, regardless of the state of repair (fair, poor or in ruins). In fact, in the case of refurbishment, hardly any excavation, foundations, cladding or flooring will be necessary. For the structure, roof, masonry and joinery, a similar amount of money/effort will be required, but, as we can see in the first diagrams on the left, this investment will stay mainly in the neighbourhood (labour) in the case of restoration and, on the contrary, will be exported from the area (machinery and materials) in the case of a new building.

The Importance of Being a Pilot Project

The ideas in this project, from the functional and structural analysis to the pathology study, including the technical solutions designed for the refurbishment of the house, were made as a pilot project that could be applied to other dwellings in the area. Having consulted the data in the National Institute of Statistics, we estimate that there are

some 5000 similar dwellings and constructions in the parish that could avail of the conclusions drawn from the project. Lord mayors, municipal architects, chairmen of local forums and associations and other representatives of the area have expressed their interest in and unconditional support for this project, which aspires to infect other parishes with the urge to recuperate their own character, expressed by means of their built landscape, that is to say, their traditional architecture.

Urgency and Applicability of Traditional Architecture in Other Geographic Areas

The aims of this project are to sensitise people about the conservation of vernacular architecture in Rincón de Ademuz and its preservation and refurbishment to stop the demolition to which it has inexorably been subjected in recent years. The need and imminent urgency of its application resides precisely in the fact that this heritage is rapidly disappearing from the area. To this end, it is our intention to practise what we preach and carry out first-hand research into the recuperation of traditional crafts and contemporary reinterpretation of vernacular building techniques in pursuit of sensitive refurbishment that respects the existing buildings without renouncing any of the standards to be expected in a contemporary dwelling.

We plan to document this experience so that it will constitute a possible reference for future restorations of vernacular houses, arouse sensibility and invert the present destructive trend in the parish of Rincón de Ademuz and spur on not only the preservation of rural heritage in other areas of the Valencian Community but of other rural areas with a similar pathology to that described here, whose traditional architecture is also worth studying and recuperating.

First Steps in the Restoration Works

Before this pilot project received this award, the first stage of restoration had been performed on the functional rehabilitation of the walls, girders and roof of the house under study. Lack of

maintenance of the building, abandoned over fifty years ago, had led to leakage, the cause of all the problems in this kind of humble architecture, with the ensuing wetting of gypsum structural piers and vault frames, rotting and woodworm in girders, purlins and joists and weakening of the masonry walls on the ground floor, whose mortar grouting was a simple mixture of mud and straw.

Roof

The roof, supported by a baywork of savin and poplar girders and logs, has a cane mesh that adapts to the irregularities of the timber, to which the tiles were applied directly with a mixture of mud and straw, filling the spaces between the gutters with small bushes. The east side of the house had serious leaks that had rotted and broken several girders and purlins, which had to be replaced urgently to guarantee the stability of the house. The aim was to recuperate the structural function of the roof and at the same time increase the impermeability and thermal insulation to be expected in a contemporary dwelling without having to perform constant maintenance works.

In the first place, with the permission of the foresters, we cut enough cane to repair the roof from a reed bed on the banks of the River Turia nearby. We did this on a winter day with a waning moon, according to local tradition. As a matter of fact, Vitruvius, in his famous treatise, recommended that trees and plant material for building purposes be cut down at that time of the year, when the sap is concentrated in the roots, in order to avoid its rotting later on.

Then the roof was dismantled and the cane baywork on the east side was uncovered to replace the damaged girders and purlins. After this had been done, the existing mesh was rewoven, and the canes were tied with a perpendicular cane guide. Ordinary hemp cord commonly found in the market today was used to substitute the traditional esparto twine. The dismantling of the tile roof in the west of the house and the placing of the new girders and purlins on top, some of which weighed 300 kilos, made the

precarious appearance of the existing wattle even worse. For that reason, instead of replacing it, we decided to cover it with a new layer, which did not need to be woven, since it was only used to cover the bare parts, so that the appearance of the original wattle prevailed.

On top of the wattle a black gypsum layer with a fibreglass mesh between timber laths acting as screeds to protect and adhere to the wattle. This layer, which also provides thermal insulation, was made out of black gypsum not only because of its excellent hygroscopic relationship with wattle as a vegetable material, but also because of the coherence of resorting to gypsum as a typical basic building material of the area. A waterproof sheet made out of transpirable fabric was nailed to the gypsum screeds on top of this for extra protection, with the perforation points overlapping. Afterwards the striated plaques of expanded polystyrene for thermal insulation were put in place. The tile roof was then attached to this surface by means of a mixture of mud and straw enriched with lime. The traditional bushes between the gutter tiles to decrease the weight of the roof were in this case replaced by strips of the leftover expanded polystyrene.

Walls

The masonry walls on the ground floor of the house, the backbone of the building's whole structural system, were in a very poor state of repair. The wall in the east side of the south facade, badly clad with two layers of rubble, because, before the extension, the east part of the house had originally been a wall around an open stockyard and not a load-bearing wall, was swollen and misshapen. At the same time, one of the three walls perpendicular to this facade, which give the house stability against the thrust of the buildings attached to the floor above, specifically the central one, had crumbled and collapsed on the ground floor, weakening its inertia. For this reason, the house had deflected several centimetres towards the street, as could be seen in the partition wall and the jambs of the doors in the east facade.

In the first place, all the south facade was underpinned from the ground floor to the roof. Later, the downstairs wall was dismantled and rebonded in alternate strips, the fallen wall perpendicular to the facade was rebuilt and the jambs of the east facade were straightened by remaking them from the foundations to the lintels. Furthermore, the three walls perpendicular to the south facade were regouted with sunken joints all the way up, to guarantee stability and inertia against the thrust of the adjacent houses. A mixture of hydraulic lime and sand in 1:3 proportion was used for all these tasks to provide the fabric with structural consistency.

Side Effects

These simple repairs performed with the means and materials currently available in the building market but based on an interpretation of the philosophy of traditional local techniques and respect for the functional logic of its constructional organism have triggered important side effects in the local people.

The possibility of restoring a roof while respecting or reweaving the existing wattle and at the same time insulating it thermally and introducing additional waterproofing under tiles that allow it to breathe, or the simple fact of using lime instead of cement as an agglutinant for the fabrics or as the main consolidant has brought about a change in the builders' mentality and attracted spontaneous visits to the house by the local residents to see the success of the structural solution and the transpirable virtues of this mortar for themselves. After years of research in the parish and, in a way, the sensation that we were talking to a brick wall, we discovered to our satisfaction that a built example has a power of conviction greater than any other sort of diffusion method. Although a great deal still remains to be done, we can affirm that, for this reason or other parallel ones, the attitude towards traditional architecture in the area is changing course towards a more promising future.



Alessia Bianco and Gabriella Guerrisi

TRADITIONAL ARCHITECTURE UNDER SCRUTINY: EXPERIMENTAL DIAGNOSIS IN RINCÓN DE ADEMUZ PARISH

This campaign of diagnosis research whose main results are presented below arose from the project of scientific collaboration between lecturers Camilla Mileto and Fernando Vegas-Manzanares of the Polytechnic University of Valencia and lecturers Enzo Bentivoglio and Simonetta Valtieri of the PAU Department of the Università degli Studi de Reggio Calabria. In this context, an instrumental diagnosis survey was carried out in situ on the vernacular architecture of the historic centres of towns in the parish of Rincón de Ademuz, under study by the Polytechnic University of Valencia for some years.

The principal aim of this experiment, to be integrated and verified with the technico-constructional research previously carried out on these buildings, consisted of proposing an innovative cognitive approach to this traditional architecture that would facilitate an understanding of its characteristics and unique features and document its consistency and overall state of conservation. In the second place, this instrumental diagnosis campaign aspires to provide an optimised and balanced operational protocol for the different structural components of this unique architecture, namely walls, frameworks, wooden roofs, vaults, etc., characterised by the exclusive specificity of its building materials and techniques, which makes these buildings objects of special scientific interest and justifies all the efforts that go into investigating, documenting and conserving them.

A village in Ademuz called Sesga was chosen for the research, as its architecture and state of conservation was a faithful sample of the area, so much so that it had already been chosen by the Polytechnic University of Valencia as a model for other detailed research. In the built mesh of Sesga, three buildings were picked out because they were made of similar materials and with building methods –although they were different as regards their interrelationship within this network, their

shape, layout, function and maintenance– so as to evaluate the influence of these endogenous and exogenous factors in the definition of their physical characteristics and state of conservation.

In the first two buildings, a laundry and a communal bakery, preliminary tests were performed to draw up a rough list of the expectations and the order of values for each component studied. After a visual inspection of both buildings and the existing maps, the most interesting spots to perform the diagnosis tests were marked according to their position in the fabric and their apparent state of repair. The tools used for this process were the following:

- A thermohygrometer, an instrument for controlling and monitoring the environmental parameters that measures the temperature and relative humidity in the interior of the buildings investigated in order to evaluate the external conditions that facilitate the appearance of certain forms of degradation like fungus, efflorescence and vegetation in the fabrics or biological attacks, woodworm or fungus in the woodwork.

- An ultrasound machine, an electronic device that measures the propagation of ultrasounds in a material so as to evaluate homogeneity and the presence of cracks and gaps, providing an instrument to understand the structural behaviour and the state of conservation of both fabrics and timber structures.

- A sclerometer, a machine for analysing concrete, consisting of an awl applied to the surface to be studied, which yields immediately the breakage resistance value in superficial compression.

- A pilodyn, another mechanical device consisting of a blunt steel pin, which gives an indication of the superficial density of timber and its state of conservation.

These particular basically non-destructive test instruments were chosen in order to make a prompt, extensive diagnosis that, not having prior references, would provide the broadest possible picture, although the results were not always comprehensive. The thermohygrometric investigation, with regular measurements every sixty minutes over a four-hour period, revealed mainly the high degree of constant damp during the hottest hours of the day. These environmental conditions give rise to the

appearance of degradation factors in the woodwork, the stone fabric and the raw gypsum buttresses.

This fact was supported by the data obtained from the fabric by the ultrasound detector, which revealed a significant decrease in the values of the speed of propagation, especially in parts of the fabric in contact with the ground and exterior zones without any cladding (average speed of propagation 1800 kHz). On the contrary, in the interior fabrics of the laundry and in general in the walls of the communal baking house, where the humidity in the atmosphere is slightly lower and whose exterior is partially parged with gypsum, notably better values were found (average speed of propagation 2500 kHz, particularly satisfactory if we take it into account that the habitual values of reinforced concrete are somewhere around 3000 kHz). These data indicate the excellent quality of these now unusual masonry fabrics and gypsum pillars, provided that humidity from the ground is avoided. A final proof of the good state of conservation and respect of these fabrics for good building practices is the fact that none of the blows with the sclerometer revealed the presence of large gaps in the mass of the walls.

The investigation of the timber yielded even more interesting and unexpected data. To start with, an analysis was performed on the physical characteristics and the conservation of the savin (*Juniperus Thurifera*), an autochthonous wood that, despite its knotted appearance and the axial slant of its fibres, has extraordinary density and tenacity, apart from enormous resistance to woodworm, even when it is near other species seriously affected by these agents. It is exceptionally resistant to factors of environmental degradation. In fact, the application of ultrasound devices together with the use of the pilodyn has yielded particularly high values (average speed of propagation 1600 kHz and average penetration values of 8 mm with a density equivalent to 480 N/m³). In the presence of great humidity, these exceptional values for wood have been found homogeneous all along the beams including the heads which, even though they were in greater danger because of the humidity coming from the fabric, showed identical resistance values.

Once these initial data had been obtained, the investigation of the third example chosen began: a house in the village, whose preliminary studies and restoration, conceived as a pilot project for the area, have been awarded first prize in Europa Nostra 2003. In the first place, a detailed thermohygroscopic chart was drawn up for each storey of the house, observing the same intervals as before, so as to compare it with the results obtained in the other two buildings. This thermohygroscopic chart confirmed that there were rather high humidity values and showed a greater temperature in the upper storeys and inertia to the change of humidity on the ground floor when the temperature increases, as was to be expected. After performing the atmospheric test, the fabrics were examined by selecting a portion of the external walls and the interior partition walls to apply the ultrasound detector and the sclerometer. On the ground floor the part of the wall recently consolidated with compatible, tradition-friendly techniques and materials was chosen. At this point it was possible to verify not only the good quality of the wall (average speed of propagation 2300 kHz) but the fact that the rest of the fabrics were in a good state of repair, which speaks well both of the works performed and the criteria behind them. The investigation on the ground floor in comparison with the upper floors also confirmed that the high degree of humidity constitutes the major cause of degradation for these fabrics, as reflected in the data obtained, which revealed a growing weakening of the quality of the fabrics near their base. As regards the partition wall studied, this aspect is even more evident because of the deterioration of the cladding and the larger amount of mortar in the joints (average speed of propagation 1900 kHz). The fabrics in the best state of conservation were those on the first floor, with higher instrumental values (average speed of propagation 2300 kHz). Here the absence of capillary humidity from the ground and leaks or drips from the roof has kept the cladding in better condition. However, the diverse building techniques used in this case must be taken into account: thin walls of

upright flagstones grouted with black gypsum, which prevents them from having an even consistency. The fact that there is no literature about this type of fabric makes these walls even more interesting, and calls for revealing experiments in the future.

Research into the fabrics on the second floor confirmed the excellent resistance and technico-constructional characteristics of the existing fabrics, with the exception of their possible decay from water leaking from the roof, something to be avoided as in any ordinary building.

Finally, an investigation was performed on several samples of the woodwork of the house on the three storeys of the building. On the ground floor a savin lintel and one of the pinewood beams of the framework were studied. The instrumental data confirmed the extraordinary physical features and the good conservation quality of savin wood (average speed of propagation 1700 kHz, with 8 mm penetration values and 480 N/m³ density). It was very revealing to compare it with the pinewood beam in the framework, whose speed of propagation of ultrasound and resistance to superficial compression are normal for average characteristic timber structures and in an intermediate state of conservation (average speed of propagation 900 kHz, with 15 mm penetration values and 335 N/m³ density), taking it into account besides that these two species of timber on the ground floor are in almost identical atmospheric conditions.

On the first floor some measurements were taken in the framework, made of pinewood like on the ground floor, confirming values similar to those obtained but better no doubt due to the lower degree of humidity at this level. The unusual qualities of the savin could clearly be observed in the recently restored roof. In this structure the beams and purlins are combined with savin beams from demolished buildings to replace the ones that were broken during the works. In this roof the savin beams have lived up to their usual high values (average speed of propagation 1600 kHz, with 10 mm penetration values and 418 N/m³ density), in contrast with the poplar values (average speed of propagation 800

kHz, with 18 mm penetration values and 290 N/m³ density), more modest even than the pinewood on the lower floors. The instrumental data concerning the different species of timber and, particularly, the extraordinary physical properties of the savin provide really interesting results, not only because of their unexpected character in the literature of the sector, but above all because they offer a broad range of research possibilities regarding the reasons for such staunch behaviour when exposed to the degrading agents in the atmosphere. In the same way, exceptional behaviour was discovered in the mortars and plaster finish of the fabrics, opening up the horizon for new research with less provisional tools to provide more comprehensive results, such as thermography for the fabrics and resistography for the woodwork. Furthermore, this study could be expanded to other areas of the region to identify similarities and differences in a panorama that is only apparently homogeneous. Laboratory tests on the building materials could provide a further contribution to this research. To this end, this preliminary investigation concluded by gathering together the major materials used in traditional architecture in the village of Sesga and other towns in Rincón de Ademuz, which is currently under examination in the Petrography and Material Analysis Department of the M.A.Re. Laboratory of the Department of PAU. This investigation attempts to discover the exact composition of mortars and claddings and identify the places from which the gypsum was extracted and its elaboration process and with these data to make final reflections about the good state of conservation of these architectures, whose construction is far more than just adequate.

Acknowledgements: We would like to thank Professors Fernando Vegas and Camilla Mileto for the opportunity to undergo this extraordinarily enriching professional and human experience. We also thank Professors Enzo Bentivoglio and Simonetta Valtieri for their constant solicitous encouragement in promoting our search for knowledge.



