

CAUSES DE LA DÉTERIORATION ET DES DOMMAGES AU PATRIMOINE CULTUREL

CAUSES EXTERNES DE DÉGRADATION: Le SOLEIL produit de la LUMIÈRE avec des radiations ULTRAVIOLETTES et INFRAROUGES (CHALEUR)

causes climatiques

variations saisonnières de la température
variations journalières de la température
gel et neige
sécheresse et gel
humidité de la nappe et de la terre

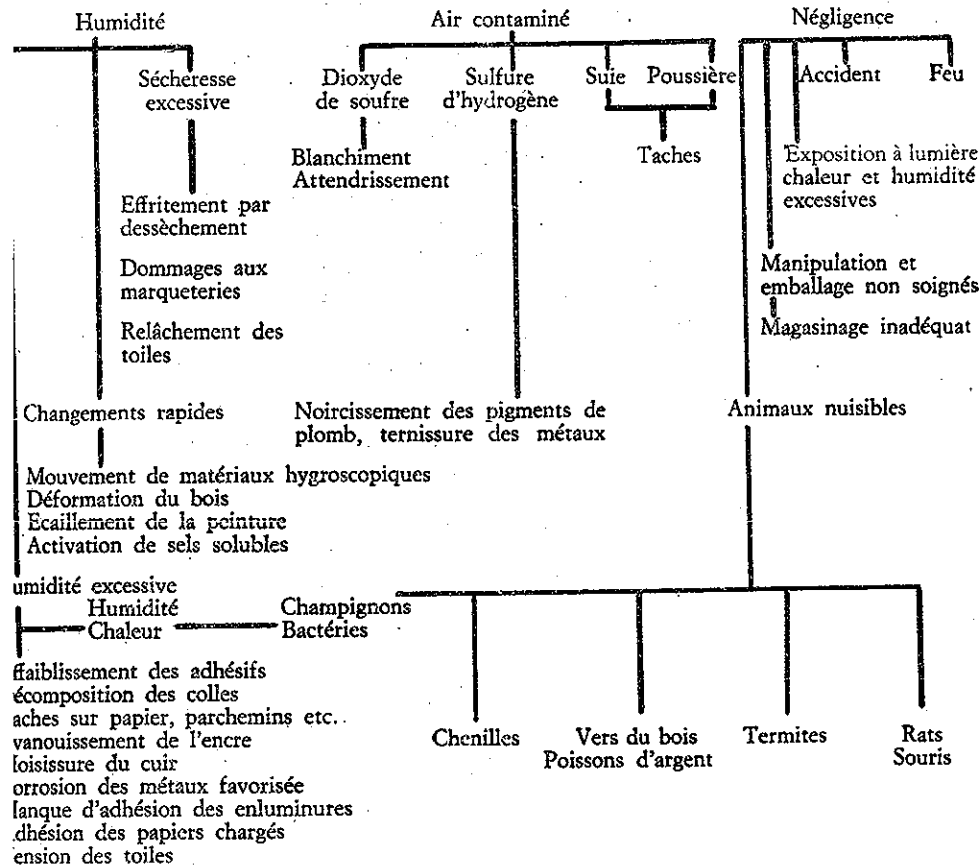
Causes biologiques et botaniques

Animaux
Oiseaux
Insectes
Arbres et plantes
Champignons, moisissures, lichens

Désastres naturels

Tectoniques
Tremblements de terre
Vagues des marées
Inondations
Avalanches, éboulements
Eruptions volcaniques
Vents exceptionnels
Incendies

USES INTERNES DE DÉGRADATION: (Note: le bâtiment modifie et protège)



CAUSES HUMAINES DE LA DÉGRADATION:

négligence d'entretien préventif
guerres
altérations voulues
pollution de l'environnement
extraction de l'eau
vandalisme et incendies
vol

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TRADITIONAL MATERIALS AND THE NECESSITY OF ENVIRONMENTAL «CONSTANTS» IN SARDINIAN ARCHITECTURE *

The general theme of this convention suggests some reflections on the importance of the preservation of urban environmental characteristics especially in those places where the phenomenon of loss of identity has been felt most, as a result of the massive suburban construction of buildings in the repetitive contemporary architecture of an «international» character.

Such constructive typologies, which have been reproduced on a large scale in the most different sites and latitudes, are systematically destroying the traditional appearance of our inhabited areas.

To be able to have a future for these areas, we must first of all promote the necessary restoration in the form of prudent and sensible interventions, thus blocking this widespread «re-usage» that has very frequently caused demolition, reconstruction and cancellation of the traces of a past, that must have the possibility of existing if we want a future to exist.

For this reason, by means of regulations, we must also have better control on substitutive building and urban expansion. Since the historico-environmental character of a settlement is expressed also by the building materials used in its construction, it will be necessary to respect its homogeneity especially within the historic centres but also in the completion zones, by avoiding creation of disturbing elements not only with oversized volumetric structures but also with the reintroduction of new materials di-

* The present paper has been developed and carried out within the C.N.R. research study still in progress at the seat of «Rilievo e Restauro dei Monumenti» of the Faculty of Engineering of the University of Cagliari in collaboration with eng. Luciano Ramon, holder of a Ministerial scholarship.

scordant both in colour and constructively with the pre-existent architectural elements.

In recent years, it has been possible to make an improved and better balanced relationship between new and pre-existing structures in town-centres, especially due to the stricter provisions of law and to a more widespread sensibilization of the base to the problem of environmental defence. However, we should not forget, for example, that the striking contrast, to a certain degree present everywhere, between the delicate colours of nineteenth century plastering and the adjoining unreliable «chromatic restorations of facades with striking areas of a background of vinyl colours» is very recent history.

Also in Sardinia, we find daily examples of environmental, degradation: both in small rural centres scattered over the vast territory of the island, as a result of the multiple and diverse geomorphological conditions of the settlements, that present very differentiated building techniques and materials, and in the bigger centres where a historico-philological reading of the pre-existent architectural-monumental and environmental elements has by now become extremely difficult (fig. 1).

In many descriptions of nineteenth century travellers in Sardinia, we find frequent references to the perceptive aspects of urban spaces and to the building materials employed.

In his voyage in Sardinia and Corsica, Corbette¹, describes a village in Barbagia as follows: «...the houses of Bitti are almost all in granite, often without plastering, the streets are very narrow and askew...», and in his comment on passing through a town in the Campidano, he is impressed by the gloomy colours of the buildings in green bricks and says. «...I have just gone through the village of San Gavino, all mire and filth with houses in black mud pugged with hay, all flabby and falling apart...».

In his «Impressions de voyage», Gaston Vuiller² describes the town of in Gallura as follows «...the houses are strange: they are built in square blocks of granite cemented with clay and generally tall, and would look like sinister fortresses if they did not have those enormous wooden balconies, suspended at each storey and projecting fanciful shadows onto to road...».

We find an analogous and even more detailed description of this town

¹ CORBETTA C., *Sardegna e Corsica*, Milano 1877, in «Viaggiatori dell'Ottocento in Sardegna», Cagliari 1973, pp. 342, 350.

² VUILLER G., *Les Îles oubliées. Les Baléares, La Corse et la Sardaigne. Impressions de voyage*, Paris 1893 in «Viaggiatori dell'Ottocento in Sardegna», Cagliari 1973, p. 427.

in Gallura in the «Itinerario dell'Isola di Sardegna» by Alberto Della Marmora³: «...the houses of Tempio are all built in big slabs or rather in elongated parallelograms of granite which are regularly cut with iron wedges. These slabs are connected together with a strong clay, and very rarely with lime, because this material is very costly even today, because it must be brought from afar on horseback; and in fact the only places in the whole of Gallura in which nature has given limestone are the promontory of Figari and the island of Tavolara».

It is excellent, but it is 50 kilometres away from Tempio with a frightful road, so far unpracticable for carts and barely practicable for the horses of the village. So the limestone is brought from Anglona, or rather from Sedini, but it is inferior in quality and the transport is difficult and costly. Moreover, the houses are very firm; they are simply not whitewashed on the exterior, which thing would be a wasted job, because lime does not bind in the mortar with granite and will fall off with the first rain...».

In the work of Lamarmora⁴, there is some information about the quarries from which the principal constructive materials were extracted.

Round about the first decades of the present century, Arata and Biasi have given a careful and acute description of what the island looked like. When the equilibrium of the spontaneous aggregation of conurbations had not yet been broken by ill advised interventions, it must have been much easier to read the pre-existent typologies: «...from the houses of the Campidano, low and in one colour with their wide porticoes looking like a cloister, to the smaller and narrower houses of the hills, from the picturesque buildings of the trachyte mountains to the coarse cottages wedged into the spiked crests of the mountains, that look as if they assimilated the rough appearance of the rock...»⁵.

³ DELLA MARMORA A., *Itinerario dell'Isola di Sardegna* (trans. G. Spano), Cagliari 1868, p. 677.

⁴ With reference to the strong materials, apart from quoting some marble quarries, as Fumigau, Mandas, Medusa, Silanus, and Teulada, the author describes the case of the countesses of Capo Negretto near l'Argentiera: «Not proper to cover the houses, it is excellent to make stairs, thresholds and window sills; it can be polished so easily as if were black marble...» (ibid. pp. 627, 738); and further on «...to the south of the Island of St. Peter, there is a place called Punta delle Colonne, where the trachytical rock... The slabs called of St. Peter are extracted from this place, and they serve to cover the floor of the stores and warehouses...» (ibid., p. 135), or «...the village of Narbolia supplies the lime to great part of the Campidano of Oristano; it does not lie on such a ground, but is made in eminently volcanic soil... they use these basaltic scoriae of Narbolia with advantage as pozzuolana...» (ibid., p. 345).

⁵ ARATA G. V., BIASI G., *Arte Sarda*, Milano 1935, pp. 103, 126.

The typologico-structural variety of the buildings is accompanied by an analogous differentiation in the building materials employed: from granite to trachyte, to volcanic tufa, to basaltic lava and to the brick baked in the sun (fig. 2).

This last material is especially present in the Southern area of the island, in the rural architecture typical of the Campidano of Cagliari, where the external lines of the enclosed cottages are more or less equal among themselves and where the structure of the walls, almost invariably composed of big clay bricks hardened in the sun in the burning plain, is extremely simple and unadorned. Moreover, built very near each other, in the uniformity of their yellow coloured appearance, these cottages look very much the same. Some of the facades are covered with plaster, while the poorer ones emphasize the parallel lines of the layers of bricks and have only one note of colour at the corners, which are reinforced by some stone or other bricklike material.

But we have examples of this architecture even more to the North, in the Campidano of Oristano, where the houses are simple in their planimetric structure, usual schemes without any useless waste of forms and external stuccos and with few windows marked by a contour of dressed stone; the projection of the cornice is short and the other decorative elements inserted in the unbaked brick wall are light.

As we move towards the North of the Island, the stony materials take the place of the « laderi », houses begin to come closer together in groups, storeys begin to accumulate and porticoes gain height, while the wooden posts of the Campidanese porticoes give way to the pillars in masonry, the platbands becoming arches.

And it is here, on the mountains of Barbagia, that the building materials play a primary role in the urban scene, both in the facades built in stone facework and in the plastered ones, where the choice and use of some of the colours was, generally, due to the coloured soils that could readily be found on the site. By adding these colouring soils to the limewash, many different shades of colour were obtained from the natural colours thus contributing to the chromatic equilibrium which is typical of the environment of Barbagia⁶.

The relationship between the materials employed in the stone houses and the geological nature of the subsoil is always expressed openly: very white houses in calcareous table-lands of the zone of Sassari, black and

⁶ MISTRETTA P., *Il colore della Barbagia. Percezione di un ambiente*, in « Sardegna Economica », n. 11, nov. 1966, pp. 598, 601.

sad houses on the basaltic table-lands of Campeda and Abbasanta, grey and light blue houses in the village of the zone Nuoro of the granitic Gallura, pink houses on the trachytes of Anglona.

Stony materials were almost always found on the site and very rarely do we find examples of residential architecture that required the use of imported building components. In Logudoro, where calcareous and granitic hills are interwoven with little volcanic table-lands, the houses are white or dark: It is only in the construction of some mediaeval churches that both stones were used together, to create a polychromatic effect⁷.

But a close examination of the building materials present in the architectural-monumental complexes in the island would require a much more detailed study than the present paper permits and would carry us too far. It shall suffice to point out that, as far as regard mediaeval monumental constructions in Sardinia, the only material employed was almost exclusively freestone: Even in the most humble places of cult, e.g. the country oratories, the walls were coated internally and externally with beautiful parallelepipedal hewn stones carefully cut, with clear cut corners and bonded with very thin joints of lime.

The most prevalent material used goes from trachyte to granite, in its various forms, to hard basalt and to volcanic tufa, with the alternation of polychromies with white lime in many monuments. The two extreme poles of the island, Cagliari and Porto Torres, are exceptions. In these places the pre-existent monuments are generally constituted of materials very similar both in appearance and in preservation, and identical in geological structure: compact limestone (hard stone), clayey limestone (middle stone) and marl limestone (tufa)⁸.

The defensive constructions of the island were also built in local stone, as in the case of the system of the city fortifications in Cagliari, where the different kinds of limestone (hard stone, middle stone and tufa)⁹ with age acquired a warm golden patina, or also in Iglesias and Bosa where we can find the trachyte hewn stones with volcanic tufa mixed with basalt.

⁷ SCANO D., *Storia dell'Arte in Sardegna dall' XI al XIV secolo*, Cagliari 1907; DELOGU R., *L'Architettura del Medioevo in Sardegna*, Roma 1953, passim.

⁸ Let us note, on the other hand, that the sandstone is used in a limited number of edifices of cult, while we recall a unique example of a mediaeval church in granite hewn stone (St. Simplicius of Olbia) and we do not know of any example of mediaeval factory of bricks. It is evident that both for the granites (and Sardinia is full of the latter) (cfr. MONTALDO P., *I graniti della Sardegna*, Cagliari 1962), they lost the custom, whereas we find them frequently in the constructions of Roman times.

⁹ AA.VV., *Cagliari in « X congresso ingegneri e architetti »*, Cagliari 1902, pp. 254-65.

Unfortunately, in many instances of careless restorations of hewnstone facework, a thin layer of limewash has been applied on to the stony material under the pretence of defending it from atmospheric degradation, but altering its original colours in the process¹⁰.

Very frequently potassium silicate was applied in the same way, especially in cases where the clayey limestone hewn stone presented limited disgregative damage. This potassium silicate introduced in the material unduly hardening silicious compounds which resisted the corrosive action of water and wind. But at the same time the deposits produced by the alkaline carbonates, potassium or soda, made the calcareous mass hygrometric and salnitrated it. Moreover, they disgregated it ulteriorly and made the surfaces on which it was applied darker and filled them with brown stains. Moreover, this procedure caused other serious inconveniences, increasing the degree of freezability of the treated stones: in fact the silicate very frequently forms a vitreous film which is not completely waterproof and very resistant. The water of the stone behind this film can freeze and break the vitreous paint which will fall off together with the layer of limestone that holds it. This will happen very easily because, in spite of all the prescriptions on the density of the liquid, either too much silicate is used or the solution is too concentrated, or finally because it dries too quickly.

It is evident that the island's architectural-monumental heritage has suffered more damage over a short period from these incorrect interventions than from the chemico-physical activity of atmospheric agents over the centuries.

Coming back to the expressions of Sardinian rural architecture¹¹, as we have seen, made up of crude materials in a good part of Southern Sardinia (crude clay pugged with small pebbles and triturated hay with clayey mortar put in moulds and left to dry in the sun), we can say that it is limited cost because it also eliminates the use of lime mortar as binder.

¹⁰ In this respect, at the beginning of the century, Scano wrote (SCANO D., *Le pietre da taglio negli edifici monumentali della Sardegna*, Cagliari s.d., p. 16) «... after having built a wall with blocks in tufa, many master builders apply a thin wash-primer of limewash and of colour onto the face, to make the tints uniform rather than for defence. This very thin film, which without hiding the facework, unifies into one tint the lime connections, the chippings and the patches caused by breakage, as also a defensive action against the action of atmospheric agents. A smearing of linseed oil, frequently used by master-builders in Cagliari, gave good results too...».

¹¹ For the typology of the rural house in Sardinia cfr. LE LANNOU M., *Pastori e contadini di Sardegna*, Sassari 1979 (trans. M. Brigaglia); CASTALDI F., *L'abitazione a corte in Sardegna (Campidano) e l'origine Mediterranea della Corte*, Napoli 1942; BALDACCIO O., *La casa rurale in Sardegna*, Firenze 1952.

In order to be more resistant statically to the load, and to be insulated from the humidity coming up from the ground, the building structures generally have a socle of about 0.5 to 1.00 m., in unsquared stone or in big pebbles, bound with mortar of mud or lime, while the older ones are made up of well-squared blocks in dry masonry.

Wood is used only for window and door frames, for all the horizontal parts and for the beams of the roofs, generally covered by curved tiles.

Sometimes the inside was stiffened and made more homogeneous and resistant to loads by the insertion of wooden roots and posts often connected to the wood of the beams; in this case the building can also be double storeyed¹².

In the Orient and in a good part of the Mediterranean this construction is the most frequently adopted habitational typology up till recently: this construction in raw materials did not last long and in fact in classical times this house was considered of a life span of about 100 years, still it had undoubtedly some advantages because of the low thermal conductivity of its materials which allowed cool and comfortable houses even in hot and dry climates.

Because these buildings decay mainly because of a careless external maintenance of the plasters that should be defending the internal structure of unburnt bricks, the urban pattern of the town with such a recurring typology, in the sequences of plastered facades that were cleaned every now and then, presented a variety of chromatic perceptions, with the facework materials of some buildings, the plasters of others and the patinas that have been superimposed through time on the facework of yet other buildings.

The characterization of the facades in these «domestic» architectural styles, volumetrically contained, and accompanied by a modest architectural finish and details (floors in tamped earth, few, simple and small openings etc.) has undergone here and there a serious unbalance in the compositional harmony of the conurbation, especially as a result of the radical changes and of the new elements built since the end of the 18th century.

In the 19th century the exterior of many edifices had already been covered by cement plastering in lively colours or with drawings of false facebrick that even today deeply disturbs the original compositional equilibrium.

Moreover, the historico-urbanistic evolution has often radically changed

¹² MISTRETTA P., *Uno strano «materiale»: il mattone crudo*, in «La ricerca scientifica», 31 (II-A), pp. 101-112 (1961).

the appearance of many conurbations especially because of the rash applications of old building regulations that prescribe wider streets and squares, demolitions for road rectifications and urban embellishments that have opened the gates to the substitutional architecture with the relative volumetric oversizing by new buildings in striking contrast with the pre-existent architecture.

Thus the difference in the proportions and volumes between the traditional and the new architectures, with the different relationship between the empty and filled spaces of the facades, created evident aesthetic-compositional unbalances. Very often, the new elements were presented side by side with the old ones, and they look like skyscrapers out of their element in a completely foreign context.

The recent provisions for environmental defence are putting an end to these contrasts, which are to be found in all regions of Italy, but which are particularly felt in Sardinia because of the repetitive « constants » of traditional building in our urban centres.

This does not mean that for the new centres, that application of smooth plaster on the facade and the use of limited glass surfaces may not be substituted by compositional models inspired by today's architecture and using the new materials.

The problem of « environmental chromatism » in rural centres in the island should not allow solutions which are far removed from the tradition, because Sardinia is a region with an extraordinary unity of culture and constant attachment to the habits and customs of a land, where the buildings are not as if they were constructed elements, but as if they were born spontaneously out of the land.

For this reason, we should therefore predispose sufficient general norms to supply precise and correct indications especially as far as regards the range of colours and of constructive materials that can be adopted and that are tied to the environmental traditions of the single « homogeneous regions » of the island (fig. 3).

The analysis of the major Sardinian centres, especially Cagliari and Sassari present analogous but more complex problems since as far as regards the « city » the relative urban pattern cannot be defined in a simple way.

It would however be convenient for an investigation of the analytical phase under the coloristico-environmental aspect, to predispose a global study in such cases, like a « colour development-scheme »¹³: on the basis

of the historico-archivistical investigations of the various provisions of the Council of Aediles and the systematic study of the relative projects, it will be possible, certainly not to cure radically the generalized « urban disease », but at least to propose a correct operative methodology of chromatic restoration for a replanning of the degraded parts of the urban scene.

But as we have already seen, the process of recovery of the city's historico-environmental values cannot be restricted only to the control of certain areas of the urban fabric, even though they be qualified as in the case of the historic centres (the so-called A zones): for a projectural homogeneity, we must supply precise rules and guidelines even for the new architectural projects to be built in the completion areas or in the suburbs.

All these suggestions could be issued by the competent Regional Assessorship in collaboration with the single sectorial organizations (ICOMOS, ICCROM, UNESCO, etc.) and should integrate the inadequacies of many current urbanistic instruments, giving more precise and specific provisions than the present « International Papers of Restoration ».

To conclude, since the new « Regional Papers of Restoration » are articulated according to homogeneous territorial zones, defined according to classes of pre-existent typologies, these can dictate precise suggestions with typifiable compositional parameters both with respect to the materials and constructive techniques to be adopted, and to the formal and coloristic details that can characterize the various urban and territorial contexts.

¹³ In this respect cfr. the interesting experience carried out on the historic centre

of Turin: BRINO G. ROSSO F., *Colore e città. Il piano del colore di Torino 1800-1850* (Assessorship for Building of the Council of Turin), Milano 1980.

NOM: TATIANA K. KIROVA - Italie.
THEME: MATERIAUX
TITRE: LES MATERIAUX TRADITIONNELS ET LA NECESSITE
DE « CONSTANTES » DE L'ENVIRONNEMENT DANS
L'ARCHITECTURE SARDE.

RESUME:

L'auteur résume dans ce travail les causes principales de la détérioration du site et se penche notamment sur les problèmes de « détérioration chromatique » qui jouent un rôle extrêmement important si l'on veut apprécier l'équilibre de composition du panorama urbain.

En conséquence, on examine les divers matériaux de construction (pierre, torchis et revêtements) qui contribuent à la polychromie architectonique du site sur le territoire régional sarde.

Les descriptions de certains voyageurs au XVIII^e siècle se réfèrent fréquemment aux aspects perceptibles des espaces urbains et aux matériaux employés pour la construction traditionnelle.

D'autre part, l'emploi des matériaux de construction peut être géographiquement divisé en « secteurs homogènes »: au sud de l'île prédominent le torchis ou brique crue, au centre et au nord les roches calcaires, laves basaltiques, trachytes et granits. Ces matériaux sont soit apparents, soit couverts d'un revêtement. Le choix des matériaux utilisés correspond dans la majorité des cas à leur existence dans la région.

L'auteur examine les diverses techniques et caractéristiques de la construction pour l'architecture de l'habitation traditionnelle ainsi que les restaurations en couleur des maçonneries des agglomérations urbaines effectuées depuis le XVIII^e siècle et jusqu'à nos jours.

Enfin, à la lumière des conclusions, il est proposé, pour les centres importants disposant d'archives et d'une documentation historique suffisantes, la préparation d'un « plan régulateur des couleurs » sur la base des documents et projets originaux des bâtiments d'habitation du siècle dernier, tandis que, pour l'ensemble de l'île, il est suggéré que soit dressée une « carte régionale de restauration », établie par zones présentant une homogénéité du fait de leur traditions typologiques et permettant de faire des suggestions précises aussi bien en ce qui concerne les matériaux à employer et les tons correspondants qu'en ce qui concerne les techniques à adopter.

NAME: TATIANA K. KIROVA - Italy.
SUBJECT: MATERIALS
TITLE: TRADITIONAL MATERIALS AND THE NECESSITY OF
ENVIRONMENTAL « CONSTANTS » IN SARDINIAN
ARCHITECTURE

SUMMARY:

These notes give a brief account of the principal sources of deterioration from environmental causes, with particular reference to the problems of "colour deterioration" which have played so important a part in the assessment of the compositional balance of the urban scene.

With this question in mind a study was made of the various building materials (stone, mudbrick and renderings) which give Sardinia a part of its architectural and environmental colouring.

Use was made of the numerous references to be found in descriptions by 18th century visitors to the island to the visual aspect of its townscapes and to the materials used in traditional building. Further, the island was divided geographically into "homogeneous areas" according to building materials used: whereas in the south there is predominance of mudbrick, in the centre and north one finds calcareous rock, basaltic lavas, trachytes and granites, either left bare or covered with a rendering.

It was thus possible to ascertain that these areas almost exactly coincided with the geographical areas where the materials were quarried.

A study was made of the complex phenomenon of the "disease of our towns" in the light of the various building techniques and typical architectural features of traditional residential buildings, and also of the restoration work done in colour on brick or stone facings in built-up areas since the 18th century.

In view of our findings it is proposed that in the case of the larger centres possessed of the necessary historical archives there be prepared a "Colour-Regulation Scheme" based on records and on the original designs for the dwelling houses of the last century, while for the island as a whole it is suggested that there be drawn a "Regional Restoration Map" showing each of the areas presenting given classes of typological traditions. It will thus be possible to make definite suggestions both as to the materials to be employed with the corresponding shades of colour and as to the techniques to be adopted.

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TEMA: MATERIALES

TITULO: LOS MATERIALES TRADICIONALES Y LA NECESIDAD DE « CONSTANTES » AMBIENTALES EN LA ARQUITECTURA SARDA.

SUMARIO:

En la presente nota, se han expuesto sumariamente las causas principales del deterioro ambiental, con referencia especial a los problemas de « degradación cromática », que juegan un papel tan importante en la apreciación del equilibrio compositivo del escenario urbano.

Por esta razón se consideran los diversos materiales constructivos (piedra, adobe y recubrimientos) que contribuyen a la policromía arquitectónica-ambiental del territorio regional sardo.

De las descripciones de algunos viajeros del siglo XVIII en la isla, se han tomado frecuentes referencias a los aspectos perceptibles de los espacios urbanos y de los materiales empleados en la construcción tradicional.

Además, se han localizado geográficamente las « áreas homogéneas » en el empleo de materiales constructivos: al Sur de la isla con el predominio del adobe o ladrillo crudo, al centro y al Norte con las rocas calcáreas, lavas basálticas, traquitas y granitos, dejados aparentes o a veces recubiertos.

Así se ha podido comprobar la casi total correspondencia entre las zonas citadas con las áreas geográficas de donde son extraídos tales materiales.

Se han examinado las diversas técnicas y características constructivas de la arquitectura habitacional tradicional, al igual que las restauraciones cromáticas de paramentos de muros en los conjuntos urbanos, realizadas desde el siglo XVIII hasta nuestros días.

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Предмет: МАТЕРИАЛЫ

Название : Традиционные Сардские Материалы и Неоходимость чтобы они находились в Постоянной Окружающей Среде

Краткий Очерк : В настоящих заметках кратко описываются главные причины порчи причиняемые окружающей средой. Изучаются с особым интересом проблемы "хроматической порчи", которая сыграла такую важную роль в оценке равновесия на уровне устройства городского убранства.

Были изучены различные строительные материалы (камень, простой кирпич и штукатурка), которые придают архитектуре и окружающей среде района Сардинии ее полихромность.

В описаниях различных путешественников посетивших остров в девятнадцатом столетии можно найти много отзывов о внешнем виде городских пространств и о материалах, употребленных в традиционных постройках. В то же самое время, с географической точки зрения были определены "однородные зоны" с точки зрения употребленных материалов; на вге острова преобладает простой кирпич; в центре и на севере известковый камень, базальтовая лава, трахиты и очевидный гранит или, в некоторых случаях, штукатурка.

Таким образом, было возможно установить почти что полное соответствие между этими зонами и географическими зонами из которых добываются различные материалы.

Автор изучает различные техники и разнообразные характеристические черты отличающие постройку традиционных жилищ и также и цветную реставрацию городских зданий построенных с восемнадцатого века и до наших дней.

В конце концов, исходя из сделанных заключений, в случае больших центров, где имеются архивы и достаточная историческая документация предполагается приготовление "плана регулирующего цвета" на основании документов и оригинальных прозрков жилищ последнего столетия, тогда как, для всей поверхности острова желаемо снятие "местных реставрационных карт", совершенных на зонах представляющей общия черты, благодаря однородности их типов и позволяющим им сделать точные указания равно и с точки зрения материалов, которые нужно употребить и их соответствующей окраски, как и техники, которую требуется применить.

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TEMA: MATERIALI

TITOLO: I MATERIALI TRADIZIONALI E LA NECESSITA DI « COSTANTI » AMBIENTALI NELL'ARCHITETTURA SARDA.

SOMMARIO:

Nelle presenti note sono state sommariamente esposte le principali cause dei degradi ambientali, con particolare riferimento ai problemi di « degrado cromatico », che tanta parte hanno avuto nella valutazione dell'equilibrio compositivo della scenografia urbana.

Ci si è perciò soffermati sui diversi materiali costruttivi (pietre, mattoni crudi ed intonaci) che contribuiscono alla policromia architettonico-ambientale del territorio regionale sardo.

Dalle descrizioni di alcuni viaggiatori dell'Ottocento nell'Isola sono stati tratti i frequenti riferimenti agli aspetti percettivi degli spazi urbani e ai materiali impiegati nell'edilizia tradizionale.

Sono state inoltre localizzate geograficamente le « aree omogenee » d'impiego dei materiali costruttivi: al meridione dell'isola, con la prevalenza dei « laderi » o mattoni crudi, al centro e nel settentrione, con rocce calcaree, lave basaltiche, trachiti e graniti lasciati a facciavista, o a volte intonacati.

Si è così potuto riscontrare la quasi totale aderenza delle sopraccitate zone con le aree geografiche da cui vengono estratti tali materiali.

Dall'esame delle diverse tecniche e dei caratteri costruttivi dell'architettura abitativa tradizionale, oltreché dai restauri cromatici dei paramenti murari degli agglomerati urbani, operati dall'Ottocento ad oggi, si è indagato sul complesso fenomeno del « male urbano ».

Dalle risultanze, infine, viene proposto, per i centri maggiori dotati di adeguati strumenti storico-archivistici, l'apprestamento di un *Piano regolatore del colore* sulla base dei documenti e progetti originali dell'edilizia residenziale del secolo scorso, mentre viene suggerita come integrazione per tutto il territorio isolano, la *Carta regionale del restauro*, articolata per zone omogenee secondo classi di preesistenze tipologiche, con cui è possibile fornire precisi suggerimenti compositivi sia per i materiali, con le tonalità cromatiche relative, che per le tecniche costruttive adottabili.

PANU KAILA

THE PRODUCTION AND USE OF PIT BURNT TAR

Ancient tar pits

“ And God said to Noah... Make yourself an ark of gopher wood; make rooms in the ark, and cover it inside and out with pitch ”. (Genesis 6:13-14).

It seems to be natural to join the origins of tar burning with charcoal pits, i.e. early production of metals. Charcoal pit and tar pit are relative constructions, and as well as some tar comes out from a charcoal pit, so also some charcoal is left as byproduct from a tar pit. In any case it is a question of thousands of years of tradition: the poles of prehistoric dwellings were protected by tar. Plinius told that in Egypt people used tar-water to embalm mummies, tar to protect roofs and ships and evaporated tar or pitch to chink barrels. The method of production varied locally, but for instance Theophrastus described the tar pit of Macedonians as very similar to that used in Finland during recent centuries.

Early tar production in Finland

The technics of tar burning came to Finland along usual ways of cultural influences, on the one hand through Central Europe and Sweden, on the other hand through Russia. In more developed countries with less forest the study of production methods have been more important. The research of burning and planning of equipment remained in German, English, French and Russian hands up to the end of 19 th century.

In the era of enlightenment the scientific academies interested in industries. From that time we have a very interesting document, an academic treatise “ The production of tar in Ostrobothnia ”, 1747, by Eric Juvelius. (Ostrobothnia is a part of Finland along the eastern coast of Gulf of Bothnia).