Earth/Lands

Earthen Architecture in Southern Italy / Architetture in terra nell'Italia del Sud

Edizioni ETS
Paths, tracks of explorations, research paths, sometimes tortuous, often crossed, constructed step by step. Knowledge, diversity of knowledge built over time, tacit and explicit, cultural landscapes in the world. Projects, experiments for a future that moves from relationship with the places and interpreted traditions.

The series explores architecture and design, tangible and intangible culture in places near and far, on objects and ideas, on knowledge and beliefs. Lands, knowledge, culturally, socially and environmentally sustainable innovation, scenarios of present and future challenges.

Sentiers, pistes d'exploration, parcours de recherche, parfois tortueux, souvent entrecroisées, explorés pas après pas. Savoirs, diversités des connaissances façonnées dans le temps, tacites et explicites, paysages culturels du monde. Projets, expérimentations pour un futur bâti sur la spécificité des lieux et l’interprétation des traditions.

Cette collection est une enquête sur l’architecture et le design, les cultures matérielles et immatérielles, les lieux proches et lointains, les objets et les idées, les connaissances et les croyances. Territoires, connaissances, innovations soutenables au niveau des cultures, des sociétés et de l’environnement, scénarios des défis présents et futurs.

Sentieri, tracce di esplorazioni, percorsi di ricerca, talvolta tortuosi, spesso incrociati, costruiti passo dopo passo. Saperi, diversità di conoscenze costruite nel tempo, tacite ed esplicite, paesaggi culturali del mondo. Progetti, esperimenti per un futuro che muove dal rapporto con luoghi e con tradizioni interpretate.

La collana indaga su architettura e design, su culture materiali e immateriali, su luoghi vicini e lontani, su oggetti e su idee, su saperi e credenze. Territori, conoscenze, innovazioni culturalmente, socialmente ed ambientalmente sostenibili, scenari delle sfide presenti e future.

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Sentieri Saperi Progetti
edit by - sous la direction de - curata da
Giuseppe Lotti – Saverio Mecca
Encouraged by our concerns about the environment, we are now rediscovering earthen architecture in the Mediterranean region and experimenting in some few new projects. With a fresh environmentally aware look we can revive earth as a new technology, a new invention for the architecture of the twenty-first century. In this era of globalization we need to enhance local cultures and earthen architecture, still the dominant technology in many countries, but investment in knowledge is necessary to explore and develop its potential as was done for reinforced concrete in the twentieth century.

Earthen architecture conservation can be successful only if such architecture is one of the future building technologies: we shall safeguard the values of diffused quality in a widespread architectural heritage only if they become a living building culture.

Accettando gli stimoli provenienti dalle nostre preoccupazioni ambientali riscopriamo ora le architetture in terra delle regioni del mediterraneo, sperimentandole ancora in pochi nuovi progetti.

Con un nuovo sguardo cosciente verso l’ambiente possiamo riscoprire la terra come una nuova tecnologia, una nuova invenzione per la costruzione del XXI secolo. In epoca di globalizzazione abbiamo necessità di valorizzare le culture locali e le costruzioni in terra, che sono tuttora la tecnologia dominante nei paesi non industrializzati e che possono essere oggetto di un processo di investimento di conoscenze quale è stato quello per il cemento armato nel XX secolo.

La conservazione delle architetture in terra può avere successo solo se queste architetture continueranno ad essere una delle culture costruttive anche nel futuro: potremo conservare i valori di qualità diffusa di patrimoni edilizi estesi solo se saranno cultura costruttiva «vivente».
Earth/Lands
Terra/Terre
Earthen Architecture of Southern Italy
Architettura in terra nell’Italia del Sud

edited by / a cura di
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Edizioni ETS
Ministero dell'Istruzione dell'Università e della Ricerca - MIUR
National Research Projects - Year 2005 - 2005089375

Coordinator: MECCA Saverio

Università degli Studi di Firenze

INN-LINK-S Research Center on Local and Indigenous Knowledge Systems and Innovation

Research Program: Scientific, experimental and tacit knowledge and conservation actions of Earthen Architectural Heritage in Southern Italy: developing, testing and validating a Web-based Knowledge Management Tool.

Programma di ricerca: Conoscenze scientifiche, sperimentali e tacite e azioni di conservazione di architetture in terra cruda in Italia del Sud: sviluppo, sperimentazione e validazione di uno strumento web-based di Knowledge management.

Research Units

Università degli Studi di Firenze

Dipartimento di Tecnologie dell'Architettura e Design
«Pierluigi Spadolini»

Programme: Knowledge Management methods and tools on scientific, experimental and tacit knowledge for the conservation of Italian Earthen Architecture Heritage

Scientific coordinator: Saverio Mecca

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Università degli Studi di Firenze

Dipartimento di Costruzioni

Programme: Definition and validation of the scientific-technical cognitive instruments necessary for the activities of conservation of the earthen architecture

Scientific coordinator: Silvia Briccoli Bati

Collaborators: Valerio Alecci, Luisa Rovero, Ettore Pelaia

Università degli Studi «G. d'Annunzio» Chieti-Pescara

Dipartimento di Tecnologie per l'ambiente costruito

Programme: Vulnerability of the covering of the raw-earth constructions, criteria of risk assessment in the conservation plan: study-case on the heritage of Abruzzo

Scientific coordinator: Maria Cristina Forlani

Collaborators: Antonio Basti, Fabrizio Chella, Gianfranco Conti, Stefania Giardinelli, Patrizia Milano, Raffaella Petruzzelli, Donatella Radogna

Università degli Studi di Palermo

Dipartimento di Progetto e Costruzione Edilizia

Programme: Earthen architectural heritage in Sicily: knowledge and conservation processes

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Thanks to Comune di Lamezia, Calabria for supporting the research work and allowing on site surveys in San Biase
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Earth as a building material between past and future

A sort of dual perspective between past and future is required when tackling the subject of earth as a building material, departing from the early initial interest and including the last forty years, which have seen its development and diffusion. This paper does not shirk its responsibility to earth as a building material, as can be seen from the title. On the one hand, the earthen architectural heritage built up all over the world since time immemorial represents a relevant field of investigation because of its documentary value and the specific problems of conservation that it poses. On the other hand, earth is often proposed as a valid alternative in building today, as part of a widespread trend towards sustainability. This dualism deserves to be studied more thoroughly, whether we choose to examine earth as an inherited material from the past, or whether we intend to understand its innovative aspects with regard to present-day construction.

In the past, building techniques employing earth were characterised by their *immediacy*, because of the need to use locally available materials; knowledge and skills deeply rooted in the specific identity (both physical and cultural) were a reflection of each individual productive context. The crux of the matter of earth as a building material lies in this link with the contextual reality, in the shift from the past to present-day reality: the problematic aspects regard both the material and non-material values of this link.

With regard to the former the question revolves around the earthen product itself, beginning with the procuring of the base material (today deprived of its traditional immediacy) and continuing with the verification of its performance (a present-day inevitability because of the comparison with other commonly available techniques).

As for the non-material values, it is necessary to consider the link with the productive context and the profound transformation undergone in the processes: the unity of the traditional production, which is particularly evident in earthen buildings, proves incompatible with the present-day separation of planning, executive and management phases. Moreover, applying a vision of technological practice integrated with the culture that is expressed in it, and also considering building techniques as *social phenomena*, we cannot overlook the fact that in many cases the social set-up that
used to be expressed through earthen architecture has disappeared or is on the way to extinction. Construction was once an event that involved entire communities, and those benefitting from it were also the leading players, over the years, in the material upkeep of the building.

Earth has been used in the most varied geographical conditions since the most ancient of times and although the techniques and locations may have been different, it was actively present in the development of building until two centuries ago. The break in this continuity of tradition, which took place with the appearance of building materials and architectural languages that had never been used before, is today the object of a profound re-thinking involving all aspects of construction. The rediscovery of earth as a building material could have a useful say in this re-thinking, as long as difficulties of a technical, cognitive, organizational and cultural nature (and posited by present-day and future scenarios) are not ignored. The issue that best sums up these difficulties, by highlighting their complex character, is that of technical regulations. The considerable responsibilities involved in building activity merit accurate checks during all phases of production (certification, tests and validations) on which an indispensable and rigid, normative framework can be based. Earth is not included in the list of building materials acknowledged by Italian legislation and, therefore, at the present time, since it is impossible to use it in the structural field, it has been relegated to the role of applying finishing touches. In fact, there are very few examples of its being used in the contemporary productive sphere in Italy, and those few interventions usually take the form of restoration operations on existing earthen buildings rather than as a result of an independent choice of one technical solution over another.

Apart from this difficulty, it should be added that the weak-point in most cases is represented by a lack knowledge of the material and poor technical skills in its utilisation, which prevent it from spreading and proliferating to any significant extent; on the other hand, because local building techniques have fortunately survived in unbroken continuity with the past, in the few cases in which knowledge and skills have proved crucial, these have constituted a significant resource (one need merely think of the experimentation being carried out in Sardinia). The notable sustainability of earth as a building material, when compared to other building materials, is among the most recurrent motivations in contemporary and future hypotheses for its utilisation; this is evident in all the productive phases, from the procuring of the base material, to its working and its eventual abandonment. However, with an eye to dualism between past and future, this aspect must also be verified, since it can be compromised by the widespread detachment between context and production: applying earthen components that have been produced at some distance from the area of operations entails an environmental cost that is certainly higher if compared to immediate traditional production.

sura della continuità della tradizione, verificata con l’avvento di materiali costruttivi e linguaggi architettonici mai usati prima, è oggetto di una revisione profonda, che coinvolge tutti gli aspetti delle costruzioni. A tale revisione, la riscoperta della terra cruda potrebbe contribuire utilmente, a condizione di non ignorare le difficoltà di ordine tecnico, cognitivo, organizzativo e culturale poste dall’odierno scenario e da quelli futuribili. La questione che riassume meglio tali difficoltà, evidenziandone il carattere complesso, è quella della normativa tecnica. Le ingenti responsabilità connesse alle attività costruttive giustificano accurati controlli in tutte le fasi produttive (certificazioni, collaudi, validazioni) sui quali si fonda un’impiantura normativa imprescindibile per quanto rigida. La terra cruda non rientra nel novero dei materiali costruttivi contemplati dalla norma italiana e pertanto allo stato attuale essa è relegata alle finiture, nell’impossibilità di utilizzarla in campo strutturale. In effetti, le esperienze di impiego nello scenario produttivo odierno in Italia sono piuttosto poche e spesso traggono spunto da interventi di recupero di costruzioni in crudo esistenti piuttosto che da un’autonoma individuazione di una soluzione tecnica preferita ad altre.

A parte tale difficoltà, va aggiunto che la conoscenza del materiale e le competenze tecniche per utilizzarlo costituiscono, nella maggior parte dei casi, il punto debole che impedisce una diffusione significativa dal punto di vista quantitativo; invece nei pochi casi in cui conoscenza e competenze risultano vitali, grazie ad un filo fortuitamente intatto di continuità con le tradizioni costruttive locali (si pensi alle sperimentazioni che si stanno compiendo in Sardegna), esse certamente vanno considerate una risorsa significativa.

Tra le motivazioni più ricorrenti nelle ipotesi di impieghi odierni e futuri della terra cruda, vi è certamente la sua notevole sostenibilità a fronte di altri materiali costruttivi, evidente in tutte le fasi produttive, dal reperimento della materia di base, alla sua lavorazione, alla sua dispensione. Anche tale aspetto, però, deve essere verificato rispetto al dualismo tra passato e futuro, in quanto esso può essere compromesso dallo scollamento tra contesto e produzione oggi diffuso: mettere in opera componenti in crudo prodotti in luoghi lontani da quelli di posa in opera implica un costo ambientale certo superiore rispetto alla produzione immediata tradizionale. Anche le prestazioni riferibili al comfort degli edifici in crudo, notevoli grazie all’inerzia termica delle masse murarie, sono oggetto di riserve, motivate dal generale innalzamento delle esigenze e dall’incremento dei requisiti energetici, oltre che dalla difficoltà di quantificare il comportamento del materiale utilizzato all’interno di tecniche miste e nell’insieme dell’edificio.
With regard to comfort the performance (excellent because of the thermic inertia of the thick walls) of earthen buildings is also object of some reservations; these are motivated by more stringent demands and an increase in energy requirements, as well as by the difficulty of quantifying the performance of the material utilised both in mixed techniques and the building in its entirety.

Any hypothesis for bringing earth up-to-date in its utilisation as a building material has to admit that, on the one hand, it would be a utopian ideal to exhume the productive context (especially material and non-material) from the past, and on the other hand, it would be a mistake to try to rigidly apply incompatible plans, which might risk reducing the sustainability of the earthen building processes in all the relative phases of the process.

The prospect of adopting earth today, apart from in an élite niche that would be rather unrepresentative of common building practices, entails a technologically flexible approach, through consensus and participation, which might succeed in overcoming not only the psychological obstacles (still rather widespread with regard to a material considered a symbol of backwardness and poverty) but also the reservations about the relative performance in terms of statics, energy and duration.

Dualism between past and future does not only have consequences in the field of new buildings but also in the field of earthen constructions from the past. The near-disappearance of the material has led to widespread ignorance, which, apart from compromising the actual identification of earthen architecture from times past, has created the conditions for unreliable conservation; this is amply demonstrated by the well-publicised case of the walls of Capo Soprano at Gela, as well as many other structures that find themselves in a precarious state precisely as a result of the widespread lack of awareness of the specific features of earth as a material.

On the one hand, the need to better conserve the testimonies from the past and, on the other, the unavoidable effect on the environment of the technical choices taken with regard to new buildings, lead in a single direction: the centrality of knowledge.

After decades of study carried out in Italy, it can be asserted that there is no lack of basic information regarding materials and techniques of employment, and it must be said that efforts to update productive processes from the past are rather advanced (whilst respecting the contexts of application and complying with adequate normative guide-lines). Perhaps one of the limitations might be that there have only been sporadic occasions when knowledge regarding bygone utilisation of the material, and knowledge aimed towards the future of this ancient technology, have been brought together; these links deserve to be developed more organically in a technology that should always be weighed up between the two poles of conservation and innovation, in the awareness that the past cannot be brought back, and nor can we alter it, but we certainly do possess the means to act for what we might hope will be a better future.