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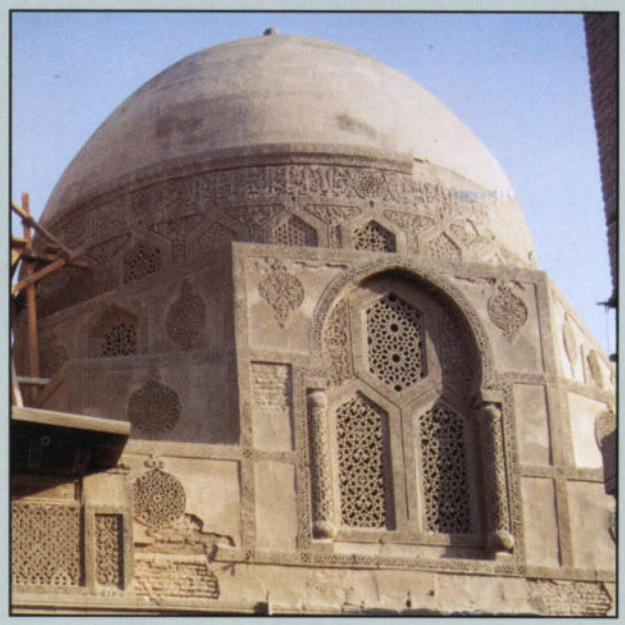


UNESCO
ROSTE

the UNESCO Articles open with the following words: "As war starts in the mind of man, it is in man's mind that defence for peace has to be built".

The *third step*, thus, started when the initiative, promoted by the CNR and by the forty most important scientific Academies in the world, led, following a number of observations at useless workshops on faith and science, science and politics, and so on, to the "Genoa Declaration" on the responsibilities of science in development, passed in November 1995 at the General Assembly of UNESCO. A "society of knowledge" can only be established through policies targeted on the one side to education and training of human resources, and on the other to creativity in research and innovation.

The first operational fruits of such a Declaration involve us from close-up.
In the spring of 1996, an agreement was signed between UNESCO and the Study Institutions of Defence in Italy, France and Spain (the Italian CASD, the Spanish CESEDEN and the French IHEDN) for a strict collaboration in the non-military fields of safety between the armies of the Mediterranean countries. Namely, the sectors covered were civil defence, environmental protection, safeguard of the cultural heritage, communication, control and monitoring systems, emergency medicine and remote medicine. At its full implementation, the collaboration will involve Egypt, Jordan, Palestine, Morocco, Mauritania, Algeria and Tunisia.

The initiative is supported by the European Union (Barcelona group within EuroMed) and by several discussion "forums" between North and South sponsored by NATO and OECD. Last September, the first pilot project was launched between Italy and Egypt. The very first points considered in the two first sessions, attended by scientists and military experts of the two countries, concerned the exchange of experience, expertise and of research results and new technologies. Briefly some of the topics analysed:

- military training applied to ecology;
- technology for the destruction of disposed weapons suitable to reduce environmental impact;
- protection of works of art in the military demesne, namely against urban and marine pollution;
- analysis of equipment and procedures in ecology, and mainly technical cartography and recovery systems for polluted lands and seas;
- training of soldiers in emergency interventions after natural or technological catastrophes, particularly chemical and biological detection systems;
- mass vaccination procedures, emergency medicine, water conditioning methods.

Specific projects are being prepared in the field of satellite information exchange and remote control and monitoring systems.
In each of these areas (civil defence, environment protection, safeguard of the cultural heritage, communications, remote medicine) research projects are being drafted. For instance, in remote medicine, scenarios are being assessed for interventions and the required technological tools are being identified:

- interconnection of suburban hospitals with a military health centre where highly specialised staff and advanced diagnostic equipment will provide a service of remote consulting and diagnosis;
- the opportunity for a restricted number of doctors based at a military station to provide remote preventive check-up and remote care after an emergency or catastrophe,implementing remote care and check-up facilities;
- the use of military vehicles equipped with moderately advanced instrumentation and remote communication systems wherever care is needed quickly or at locations isolated or out-of-reach. An example of such a vehicle is the "Hospital car" connected to specialised centres providing remote consulting.

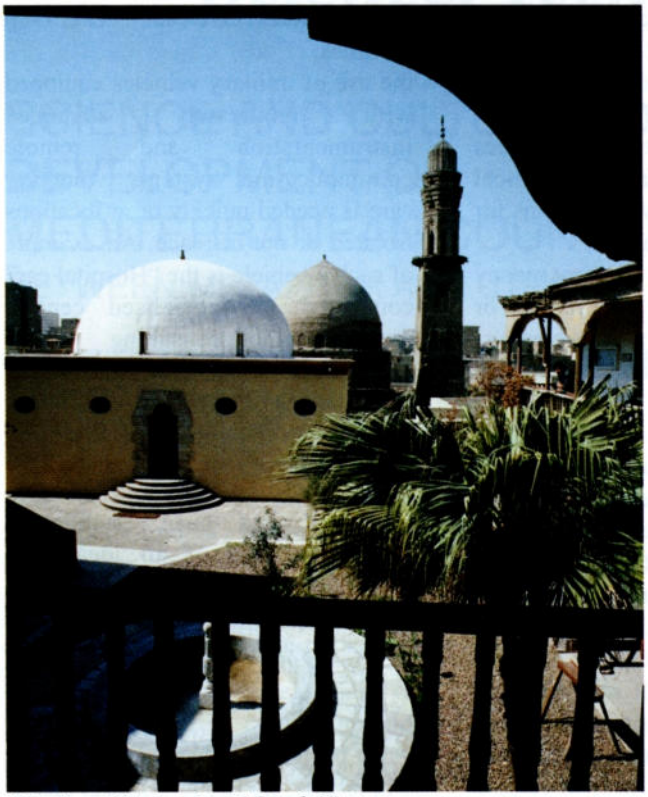
A final remark to conclude, the Mediterranean has been the melting-pot of civilisation, culture and scientific progress; there the first cultural networks had been laid out, "invisible academies" had been established, people and most of all ideas and knowledge circulated freely. Today, we are aiming again to such a society of information and knowledge, obviously in different forms but pulled by science and a technology able to provide new tools, ideas and opportunities. The static metaphor of space (economic space, political space, scientific space, technological space) is being replaced by the dynamic metaphor of flow and networks in view of a dematerialization of resources. And such a phenomenon is taking place in science, in culture, in the society, that is in everyday life. The remarkable political, cultural, scientific and technological effort underlying several transnational cooperation projects represents at one time nowadays metaphor and utopia, nowadays hope.

**** CNR - Institute of Study on Scientific Research and Documentation - Rome, Italy***

TRAINING ACTIVITY AND RESTORATION AT THE "ITALIAN-EGYPTIAN CENTRE" IN CAIRO

Giuseppe FANFONI*

The cultural and monumental heritage of Egypt spans the widest historical period in the Mediterranean area and, thanks to its vastness and variety, accounts for the second economic resource of the Country, tourism. It encompasses particularly in Cairo, the Pharaonic Age, at the dawn of Mediterranean civilisation, up to recent Coptic and Islamic cultures, which have been endly developing in connection with European artistic movements, e.g. Liberty and Contemporary art.
The amount of building techniques and heterogeneous handicrafts used in ancient Egyptian monuments, involves quite peculiar cognition problems for



Exterior of the restored Samà Khana.

their conservation. Moreover, detailed technological research work and investigations are needed to unveil the interaction among geologic, climatic and environmental aspects proper to Egypt in general, and especially to Cairo.

The "Italian-Egyptian Centre for Restoration and Archaeology" is located in a large monumental area of Islamic Cairo - whose recovery it has long undertaken - and is engaged in finding solutions to the above described issues both in their complexity and environmental specificity. The restoration of the Sama'khana (the so-called theatre) was the first step in the restoration. This monument was built by the Mewlewi Derwishes, an Islamic religious order of Turkish origin and is representative of the method applied since the beginning of the restoration programme. Ancient structures were conserved thanks to innovative systems and always in the respect of ancient techniques and using the original materials as far as possible. The theatre had been built on a pre-existing madrasa (Koranic school), thus the recovery of the underlying ancient remains, which required archaeological excavations, was carried out after hanging the over-imposed building on a modern steel structure, and replacing the decayed foundations.

The restoration of the damaged dome and walls of the theatre was accomplished in the respect of original techniques and materials and after appropriate analyses. The wood structural elements were kept by strengthening them with an anti-seismic system of iron brackets and tie bars. The collapsed dome was fastened by a special gear of metallic belts and those parts with lacking wooden laths were integrated according to Turkish ancient artisanal techniques. Even the mortar included the same original components, as proved by analyses, together with wood fibres appropriately mixed with resins and chemical additives to grant a better bond and durability in time. The effectiveness of such a methodology, which foresees the study and research for technical solutions during the restoration itself, is granted by the organisation of the yard into a school which offers a direct approach to actual problems with a positive training to finding, realising and verifying the specific technique.

The Italian-Egyptian Centre was founded in 1988 under the patronage of the Italian and Egyptian governments in the presence of the then Italian ambassador in Cairo, G. Migliuolo, and the Egyptian minister of culture on the occasion of the opening to visitors of the Sam'khana, ten years from the beginning of the restoration work. Since then, the Centre has been carrying on its training activity at different levels, handicraft to university, and has promoted the establishment of new restoration courses in important Egyptian universities, Cairo, Helwan, Qena, Alexandria.

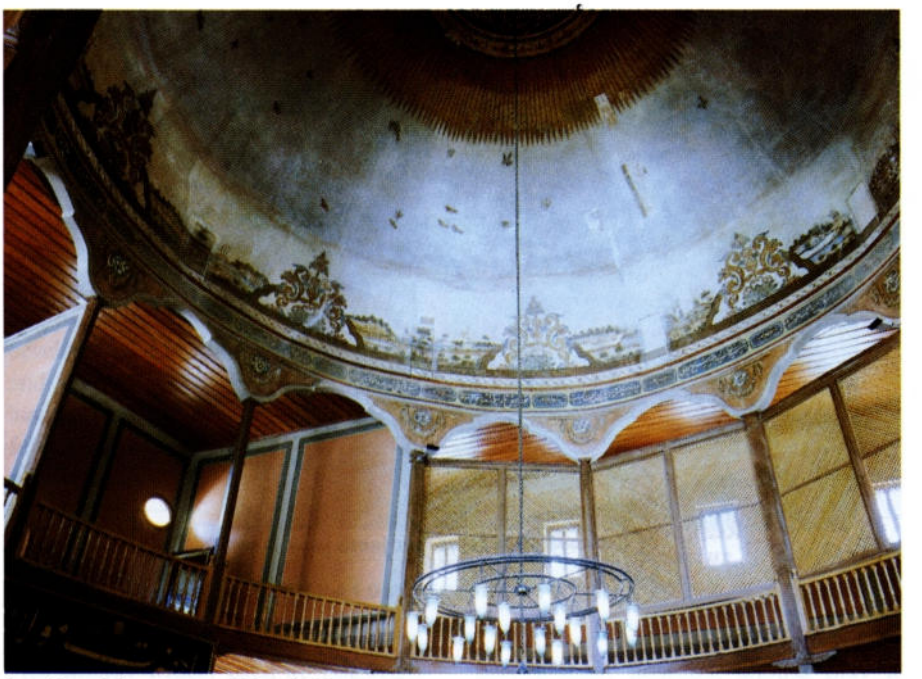
At present, the Italian-Egyptian Centre is engaged in a collaboration with Tanta University, which has charged Prof. Aggaghi Ibrahim with the co-ordination of a triennial education programme for students at the Archaeological Department of Islamic Art.

Out of this co-operative spirit with the Egyptian authorities, which marks the activities at the Centre, Italian experts have particularly focused their attention on the solution of some most urgent problems and the causes of decay of monuments which concern the Egyptian Antiquities Organisation. The most damaging causes of decay are, indeed, the presence of a great quantity of salts in the building materials, due to their geological origin, and its interaction with the rising dampness by capillarity, increasing ever more as a consequence of current geographical and environmental changes. In Cairo, the phenomenon, remarkably augmented by the rising of underground water following the building of high Assuam Dam, is much worsened by the water leaking from old pipelines and sewer network. At present, this is the most serious danger for the conservation of Egyptian monuments.

The Italian-Egyptian Centre has utilised, for the first time in this country, a special equipment, partly built in Italy and partly in Egypt, for cutting at ground-level the huge walls of an important mausoleum placed in the monumental area where the Centre is located, Hasan Sadaqa Mausoleum. The insulating system has resulted most effective, which consisted in the insertion while cutting the walls - thicker than 3 metres in some points - of a water-proof layer. The study of this restoration method in view of its wider and more general application, is underway within a research programme sponsored by C.N.R.-SMED. Indeed, this technique can be applied to other Egyptian monuments endangered by the same dampness problem, as soon as a large enough team of experts and craftsmen has been trained to perform such a delicate intervention on ancient

and decayed walls and structures.
The various and complex problems of technical experience and know-how, which have been faced by the Italian-Egyptian Restoration Centre in the course of its long activity, cover all periods in Cairo's history, a town rich in archaeological remains, monuments and buildings, from the foundation of the Arabic town to its present days. In particular, the wide area whose recovery has been assigned to the Italian-Egyptian Centre, features the Qusun-Yazbak-Aqbardi Place, the most imposing example of Mamluk architecture in Cairo, the great Hasan Sadaqa Mausoleum (1315 a.C.) and the Sunqur Sa'di Madrasa, built on the remains of Tulunide houses and partially used in the building of the Sama'khana of the Mewlewi Derwishes (1800 a.C.)
The architectural and artistic interest of the latter building, which had not originally been included in the list of conservation monuments, has emerged in the course of its historical study and restoration intervention. This particular cultic structure of Turkish origin has resulted to be the highest architectural expression of Mewlewi philosophy and complex symbolism of the mystic dance performed by Mewlewi Derwishes on Fridays at sunset. The importance of the rescue from impending loss of such a unique masterpiece was stressed, at the opening ceremony, in the words of the Egyptian Minister of Culture, Faruk Hosni: "Cairo Sama'khana, owing to its perfect fusion of artistic and architectural ideal with religious thought has greatly enriched the national prestige of our archaeological heritage". Since then, the restoration yard has enlarged and works extended to other buildings in the area assigned to the Centre, so currently the recovery of the Sunqur Sa'di Madrasa and of the Hasan Sadaqa Mausoleum are close to an end. The restoration methodology and philosophy consisting in the gradual advance of historical and technical research, beside the operational intervention, have saved important monuments without traumatic or spectacular impact on the environmental and urban context of ancient Cairo.

** Italian - Egyptian Centre for Restoration and Archeology - Cairo, Egypt*



Interior of the restored Samà Khana.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL INNOVATION FOR THE DEVELOPMENT AND CO-OPERATION IN THE MEDITERRANEAN AREA

*Ezio MARTUSCELLI**

The introduction of new technologies is a prerequisite for competitiveness of all productive activities and for the socio-economic development of both highly industrialized and developing countries.
Very close connections among scientific knowledge, technology and technique, i.e. among the basic components of the "Resources - Know how System", represent the necessary condition for the nucleation of innovation processes.
In a "Technological Innovation System", the evolution of scientific knowledge, technology and practical applications is interrelated in order to identify those strategies aimed at realizing new processes and new products.
The basic elements of an innovation system are control, selection and targeted transfer of information (the scheme of a technological innovation system is reported in fig. 1).
The new technologies represent a decisive factor for the development of countries. They will increasingly change the way of living and of working by affecting: employment, mobility, the environment, energy, health, nutrition.
Thus the impact and the appropriate use of new technologies, by inevitably intersecting some key problems of our time, poses a series of questions:
- whether the number of new jobs will be larger or smaller than lost jobs;
- what kind of productive activities will be destroyed and what type of new activities will be created;
- how workers' expertises have to change and how operators should be retrained;
- what new educational and training systems should be developed;
- what organizational changes will be introduced into the economic and productive system, also due to a different pattern of demand and supply in a