

and procedures perfected over centuries of continuous adaptations is certainly not as risky as abandoning them all of a sudden in favour of completely new techniques (proving valid only many generations later) which often risk seriously altering the architectural heritage.

SCIENTIFIC TOOLS AND PROCEDURES

How was Local Seismic Culture formed?

In order to ensure a scientifically rigorous approach, the first stage of the research project was devoted to define the notion of LSC and analyse its components.

Once definite notions and factors were expounded concerning LSC, various hypotheses, which were later confirmed by case studies, were then formulated about the relation between earthquakes and seismic culture.

The fact of the matter is that not all earthquakes produce a seismic culture.

Devastating earthquakes do not cause specific knowledge and know-how to be established (if every building has been destroyed it is difficult to recognise the most efficient techniques; if there is a large loss of human life, it is obvious that the knowledge will die along with the people). However, minor earthquakes do not cause enough damage to buildings to enable techniques to be identified.

Even the recurrence of earthquakes is an important factor

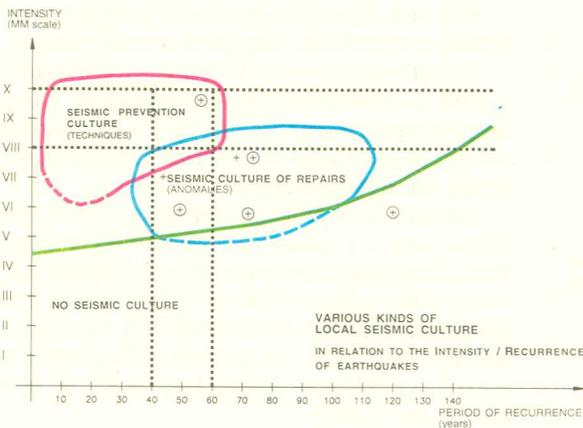


Fig. 8 - By locating a specific site in a Recurrence/Intensity diagram one can find out in advance if there is a reasonable probability of finding evidence of LSC and if so, of what type (prevention/reparation).

for if they do not happen often, people do not remember the effects for very long.

In short, earthquakes need to have the “right” degree of intensity and recurrence so that a seismic culture develops.

It is reasonably accurate to say that a seismic culture is developed if the earthquake intensity is high but not

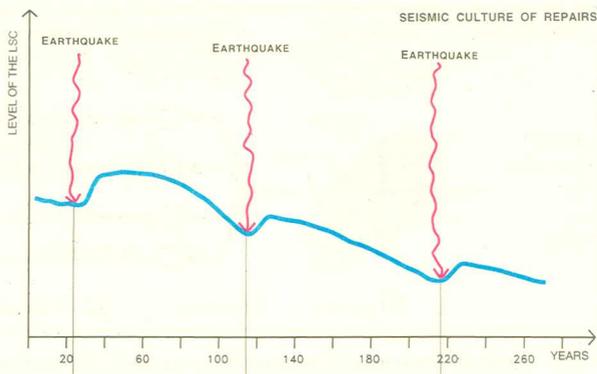


Fig. 7 - Whenever earthquakes recur infrequently the aseismic function of certain techniques is forgotten and gradually abandoned completely. Attention is only paid to consolidate them following another earthquake (Seismic Culture of Repairs).

catastrophic (VIII - X degrees on the MM scale), and if its recurrence is such that one generation is affected at least twice (40-60 years). In this case techniques are tested and improved upon after each earthquake and their effectiveness becomes well known to the community; thus local aseismic techniques are developed and adopted across the board. Therefore a seismic culture is created which may be defined as being “preventative” (fig.6)

If there are long intervals between the earthquakes the know-how gained whenever they occur gradually disappears with time. LSC reaches its peak, as it were, immediately after the earthquake and then it tends to fade slowly. At this point, a culture of “aseismic repairs” is created and this is usually documented by anomalies which can be observed in the construction itself (Fig.7).

Where is LSC to be found?

Analyses defining the genesis of LSC do not only have a scientific or historical interest. In the search for LSC, an application of the so-called “conceptual predictive model” of the methods already successfully experimented in historical and archaeological research makes it possible to find local aseismic technologies which still exist (Fig.8)

How to re-evaluate Local Seismic Culture? With what means?

Finding traditional aseismic techniques requires a thorough knowledge of the vernacular architecture, of the pathology of the structures, of its seismology, geography, economy, history and town-planning. In order for the work of specialists to become integrated better, special “protocols” were developed and then tested in case studies before being up-dated and circulated. These protocols were conceived as a check-list to be used to further the research. Figure 9 shows the procedure followed to select the “anomalies” with an aseismic function in all

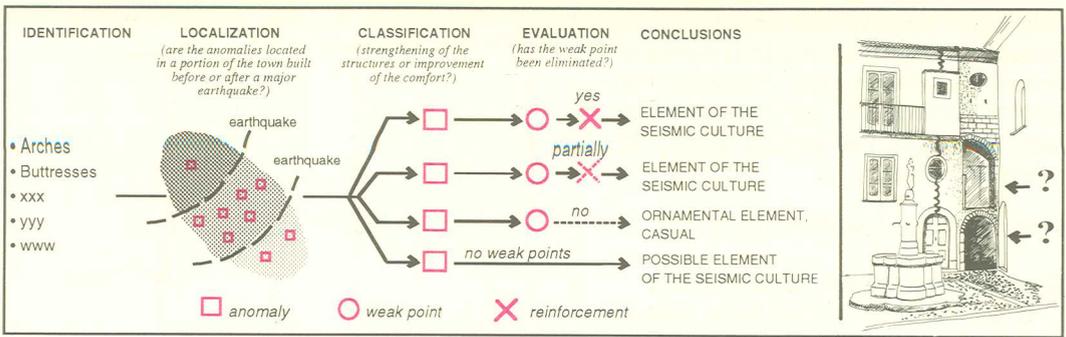


Fig. 9 - In order to be able to see if an element of vernacular architecture has an aseismic function, a standard procedure can be used based on the analysis of the "anomalies" and the evaluation of how efficient they are in eliminating the building's weak points.

those found. By using this procedure it was possible to prepare a catalogue of the traditional aseismic elements in the villages which were used in this research (S.Lorenzello, Italy; Lefkas, Greece) (Fig.10).

The protocols may also be used by research workers but they are not sufficient to set in motion an action involving the local community. Former traditional techniques cannot be employed unless they are not "convenient" for the inhabitants. In order to actively involve the whole community, the methodological aspects must be given equal importance to the technical aspects. Specific training is however necessary. The training programme of the intensive course on Local Seismic Cultures organized by the Ravello Centre is one such example.

EUROPEAN UNIVERSITY CENTRE FOR CULTURAL HERITAGE
Ravello, Italy
Intensive Courses on "Local Seismic Cultures"

INTRODUCTION

Presentation of the Course and the Atlas
How to reduce vulnerability by re-discovering and re-evaluating LSC.

BASIC PRECEPTS OF SEISMOLOGY

Earthquakes: their origins and effects on constructions
The limits and potentiality of historical seismicity when re-evaluating LSC

THE METHOD

"Reading" the constructions with an archaeologist's instruments and procedures.
An Eco-Historical analysis of the territory and the construction.

THE BACK-UP OF SPECIALISTS SUCH AS:

Geographers: earthquakes, local resources, techniques
Geologists: the site and danger signs
Architects: technologies, typologies, earthquakes
Town Planners: closed/open systems, urban tissue, hazard culture
Systems Experts: the role of laws, regulations and subsidies when an LSC is formed.

EXAMPLES OF CASE STUDIES

S.Lorenzello (Italy)
Lefkas (Greece)
Vernègue (France)
Friuli (Italy)
Popayan (Columbia)

INSTRUMENTS AND PROCEDURES

Preliminary analyses
The operative procedures in recognising the elements of LSC.
Feed-back of re-evaluated knowledge to the local system through the participation of the local community.

PRACTICE

Research-visit to a site with documentary evidence of LSC.

PROSPECTIVES

Round table / debate on the more wide-ranging implications and the possibility of actually applying the topics dealt with.

A GLOBAL PROGRAMME

Re-discovering and re-evaluating LSC - a multi-purpose action

Re-discovering and re-evaluating LSC is not (just) a plan of action to protect minor examples of a country's heritage.

During the prevention phase it stimulates a suitable means of continuous maintenance for older constructions, avoids dangerous modifications being made and favours respect for aseismic regulations (thus the loss of human life and material damage caused by an earthquake is reduced).

If attention is paid to the LSC immediately following the seismic shock, it is easier to spot the buildings in danger which, though damaged, have kept a high level of resistance; it also prohibits buildings which stand as symbols of the local identity from being torn down (consequently lowering the number of homeless and the incidence of aftershocks and psychological syndromes deriving from the loss of one's material environment).

Finally, if the LSC has already been re-evaluated, the local system is better protected against the "invasion" of unsuitable products during the rehabilitation phase.

What is more is that the techniques found in the LSC are always based on the intelligent use of local resources, even though they may vary from place to place. Re-discovering and re-evaluating them stimulates the exploitation of local know-how. Thus, by re-evaluating the LCS can one actually encourage the processes of development.