

**Session Track:** Sustainable Heritage Conservation  
**Session Code:** CS17a

**Paper:** Climate Change—Defending the Built Environment on a New Front

**Presented by**

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**Speaker(s) Biography**

David Mitchell BSc Hons MSc IHBC ProfICME has responsibility for technical research, skills and materials for Historic Scotland, an Agency of Scottish Government. Trained as a scientist, he was CEO of Heritage Engineering for ten years - specialist consultants and contractors in the industrial heritage field. He specialises in the conservation of iron structures. He is Chair of the Scottish Industrial Heritage Society, a founding trustee of the Scottish Ironwork Foundation. He is a member of the Institute for Historic Building Conservation and the Institute of Cast Metal Engineers.

**Abstract**

Climate change defending the built environment on a new front.

Climate change poses a range of threats to the traditionally built environment. Medium to long term effects are direct in terms of climatic changes prompting temperature and precipitation shifts which are likely to accelerate material decay in many instances.

As an Agency of the Scottish Government, Historic Scotland s Technical Research Group has identified shorter term indirect impacts of climate change as being potentially hazardous to the built environment. The pressing need to be seen to be doing something is resulting in knee jerk reactions to combating climate change by altering existing building fabric to reduce energy use , in Scotland usually by insulating measures.

The perception that old is cold is a common one. Traditional construction - windows and walls in particular, are viewed as thermally inefficient. The introduction of energy performance certificates for buildings in Scotland based on software models designed for new build technology have significant potential for harm in that data quality for traditional materials is extremely generic. The consequence is that traditional buildings receive much poorer ratings than is justified.

Against this background, Historic Scotland has identified that available data on thermal performance on traditional materials and construction is poor. The arguments around sustainability of construction are often superficial, and often do not consider embodied energy of existing buildings and materials. The carbon footprint of locally sourced material and skills against imported materials is not well defined.

In response we are conducting primary research to provide baseline values of thermal performance on traditional windows with incremental improvements , and are undertaking site measurement of different types of masonry wall construction across Scotland to take account of variations in construction, and to reflect that Scotland is one of the worlds most geologically diverse countries directly reflected in our architecture. The range of inter-disciplinary work has required collaborative working between building professionals, scientists and policy advisors within, and external to our organisation.

The lessons learned here are applicable to many other countries.

We intend to produce a developing matrix of thermal performance measurements for masonry walls with construction, depth and moisture variations which will enable specifiers and building control officers to make

more informed decisions. We are also collating reference data on embodied energy and carbon footprinting of traditional materials and components.

This presentation outlines the perceptions, challenges and primary research involved achieving these objectives.

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**Session Track:** Sustainable Heritage Conservation  
**Session Code:** CS17b

**Paper:** Conservation Treatments for Sustainance of Earthen Architectural Heritage in Western Himalayas

**Presented by**

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**Speaker(s) Biography**

Charu is a Conservation Architect graduated in Architecture in 2000 from State Engineering College, India. She also holds a Masters in Science Degree in Historic Preservation from University of Pennsylvania. She was a Charles Wallace Conservation Fellow in 2004 to Scottish Lime Center in UK for her advance study and research in lime mortars. She has been a US/ ICOMOS intern and worked on Wooden Covered bridges Preservation Project with Historic American Engineering Record (HAER) National Parks Service. Previously in India she had worked with University of Vienna on the documentation and hands on conservation of several historic Buddhist monasteries and vernacular architecture in the Western Himalayas, particlaurlly in Spiti and Ladakh region among other works which range from condition appraisal of historic stuctures, conservation strategies and on-site restoration and conservation. Her research interests are in the field of mortars and grouts, pathology of deterioration and design of repairs. Her most recent research is into studying compatible grouts as a stabilization technique for historic buildings in the seismic areas.

**Abstract**

Changing climatic patterns and the seismicity of the Western Himalayan region of India pose a serious threat to the continued existence of historic earthen Buddhist temples and vernacular houses in Ladakh, Spiti and Upper Kinnaur regions. Located at altitudes above 3500 meters, this region experiences harsh weather conditions. The sustainability that was earlier dictated by resilience in man s interaction with nature is now affected by changing natural conditions and is aggravated by changed social aspirations and depleting natural resources from the region. The earthen Buddhist temples in the region have revealed major irregularities of strength, stiffness and mass as a result of previous seismic activity, which are the major factors contributing to their unsatisfactory performance. The other more important factor however is the extreme vulnerability of the material against the increasing moisture through increased precipitation in the region. The paper elaborates the ongoing monitoring and conservation work at the temples of Nako Monastery and presents complex technical decisions of addressing the structural compromise by sympathetic stabilization techniques of walls adorned with decorative interiors. These decisions are guided not only by the evaluation of the historic usage but also in the present socio-economic context and aim at future continuity of the cultural patrimony. Conservation of this living heritage raises two important conflicting issues. On one hand the preservation of the ancient architecture and its features in their original form is of utmost importance as a document of history. On the other hand this living heritage poses a serious threat to the safety of the inhabitants during an earthquake. Stabilization of structure and material to a certain extent would alter and interfere with the historic fabric and pose a serious threat to their authenticity. The practical design and development of conservation treatments for such ancient existing earthen buildings in the region, also keep in mind the potential hazards to the life, the present condition of the structure, its materails and their behaviour before another earthquake. It also addresses preserving the vernacular building resource, re-incorporating the traditional building practices and techniques with appropriate technological modifications hence generating employment opportunities to alleviate the pressure on the environment by better use of natural resources. Besides ongoing art and structural conservation of the temples, the project also is generating technical notes for effective diagnostic, technical conservation and monitoring of the treatments which have been discussed in the paper. These would be distributed among regional authorities and local masons to generate concern and future awareness for the long-term sustainance of conservation actions.7

**Session Track:** Sustainable Heritage Conservation  
**Session Code:** CS17c

**Paper:** Sustaining the Future of our Heritage: Traditional Management Practices of a Mountain Community in Ladakh

**Presented by**

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**Speaker(s) Biography**

Tara Sharma is a heritage management consultant and former Programme Director (Cultural Resources) of the Namgyal Institute for Research on Ladakhi Art and Culture. She joined NIRLAC in 2000 and developed their heritage conservation programme, working with several village communities and Buddhist monastic institutions across Ladakh. In 2006 she set up her own heritage management practice and is currently working as a consultant with several institutions including NIRLAC and the Aga Khan Foundation. As a consultant with ICCROM, she is developing a handbook for site managers of Living Heritage Sites. Ms Sharma's interest lies in working with traditional custodians and communities in promote Art and Cultural Heritage. She has a M.A in History from the Delhi University.

Mark Weber is currently the Technical Director and Field Projects Manager for World Monuments Funds Field Projects Department. He manages and directs a segment of WMF's portfolio of actively funded conservation field projects in regions including Europe, South East Asia, and North Africa, assists with the planning and review of WMF's country-wide conservation initiatives in India and Turkey, and monitors the work of building conservation specialists assisting WMF projects world-wide.

Prior to joining WMF, Mr. Weber served as the Director of the Technical Preservation Services Center, the major public outreach program at the New York Landmarks Conservancy, New York. Previously, he worked for the Preservation Society of Newport County and the Newport Restoration Foundation. While in Newport he co-authored the book *Newport Houses*, Rizzoli International Publications, 1989. He has a M. A. in Historic Preservation from Boston University's Preservation Studies Program and a B.A. in Economics from the Whittemore School of Business and Economics at the University of New Hampshire.

**Abstract**

The conservation of a community's resources (cultural or natural), across much of rural India and indeed Asia, is closely linked with the function that heritage continues to perform for the community and traditional management systems have been developed to preserve these resources over the centuries. However, as these resources become increasingly vulnerable, in an era of climatic change and globalisation, traditional communities have to cope with a whole new range of issues. In rare cases, they are able to make the leap by forming new partnerships and developing new models of development which help to carry their traditional way of life into the future.

One of the best examples of this can be seen in Basgo, a village located in the high altitude mountain desert of Ladakh. The traditional village body here is assisted by a youth group, the Basgo Welfare Committee (BWC), in addressing conservation and development issues in the village. A task taken up by them has been the successful restoration of their endangered Buddhist temples. Begun in 1990 under the leadership of a young engineer from the village, the programme was recently awarded the UNESCO Asia Pacific Heritage Award of Excellence which recognised the community's stewardship in preserving their heritage by working with traditional craftsmen and conservators.

The temples, located in an abandoned citadel, are dedicated to the Future Buddha, Maitreya and are of great spiritual importance for the village. They feature colossal sculptures of the Maitreya in addition to magnificent Buddhist wall paintings. The first task was to construct a massive retaining wall to protect the foundations of the rapidly eroding hill on which the temples stood. Villagers volunteered material and labour and mobilised resources outside the community to commence work. In 2000, the BWC initiated a partnership with NIRLAC (Namgyal

Institute for Research on Ladakhi Art and Culture), a local NGO, to develop a holistic conservation plan for the temples.

This partnership was joined by the World Monuments Fund and a five year programme was launched for the restoration of the largest of the three temples, the Chamba Lhakhang. The conservation programme was developed by a multi-disciplinary team which included traditional master craftsmen, engineers, architects, painting conservators and local artists. Using traditional building technologies as well as introducing new technologies, where needed, to mitigate the effects of climate change, the temple was finally restored.

Measures were also taken to safeguard the sacred nature of the site through special rituals led by the monks. Treatments for incomplete or damaged Buddhist wall murals posed philosophical challenges, yet through a consultative process, were completely restored to satisfy spiritual requirements of the community.

Continuing its mandate to address other issues in the village, the BWC has drawn up a long term sustainable village development plan. Funded by the WMF, the plan was developed with the advice of local experts and looks at a range of issues including health, education, village planning and infrastructure, income generation programmes for women and youth, conservation of other cultural and natural resources including intangible cultural practices, developing the tourism potential of the village, etc. A stakeholder s workshop was held to present the plan and provided an opportunity for the community to help shape the final recommendations and take the lead in implementing them.

The community based methodology developed in Basgo is now being used by WMF and NIRLAC on other conservation sites across the Himalayan region.<sup>7</sup>

**Session Track:** Sustainable Heritage Conservation  
**Session Code:** CS17d

**Paper:** Learning from the Strategies of the Past for Their Application in Current and Future Architecture: Sustainability in the Spanish Vernacular Architectures

**Presented by**

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**Speaker(s) Biography**

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Dr. Arquitecto. Catedrático de Construcción de la Escuela Técnica Superior de Arquitectura de Madrid. Presidente de la Fundación Diego de Sagredo. Director General del Master en Dirección de Empresas Constructoras e Inmobiliarias (M.D.I.), Presidente del Consejo Rector de los cursos de Arquitectura de Interiores.

Ha sido Secretario y Subdirector de la Escuela Técnica Superior de Arquitectura de Madrid, Director de la Escuela Técnica Superior de Arquitectura de Barcelona, Rector de la Universidad Politécnica de Las Palmas, Rector de la Universidad de Castilla-La Mancha, Director General de la Junta de Construcciones Escolares del Ministerio de Educación y Ciencia, Director del Departamento de Construcción y Tecnología Arquitectónica de la Escuela Técnica Superior de Arquitectura, de la Universidad Politécnica de Madrid, coautor del libro "Arquitectura popular de Lanzarote"

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**Abstract**

Learning from the strategies of the past for their application in the current and future architecture: sustainability in the spanish vernacular architectures

The richness of Spanish architectonic heritage not only resides in the great historical monuments, but also in the vast heritage of popular and traditional architectures that are out of the studies of the History of the Architecture. However, these architectures, which can be named as vernaculars due to their attachment to their natural and cultural environment, give to today-architect some priceless lessons.

Vernacular architecture offers us, first, a valuable lesson in sustainability: the capable utilization of the available resources, the use of close to site materials meaning efficient economy, a cost effective achievement of comfort and the primordial character of the habitability and functionality. So, functionality, comfort, economy and durability are its more important characteristics. This architecture is, generally, built without architects and has knew taken advantage of the natural characteristics when they are beneficial and has knew defended from them when are hostile to create an habitat perfectly prepared to the comfort parameters.

Vernacular heritage must be preserved. For this, is necessary first that it was complained and analysed entirely: typology, construction, bioclimatism, functionality& Its bigger enemy is the disuse and the lack of maintenance. It is an architecture that has been abandoned whit the rhythm of the changes in the social and economic frame from familiar groups in a rural environment to the urbane way of live. When an architect approaches the rehabilitation or restoration of an piece of architecture built with traditional materials and systems could be tempted to use the new materials and systems, most of the times for the ignorance or mistrust. For that, and taking into consideration the magnitude of the no-monumental Spanish heritage, its necessary to make one very

comprehensive study of these constructive and bioclimatic items, whose efficiency has been endorsed along the centuries. These ones can be remained in force even in modern architecture.

We can not only speak about one Spanish vernacular architecture. The diversity of climates and natural characteristics which are around the Spanish geography makes it impossible to define a Spanish rigorous typo. So, whereas in the southern Iberian Peninsula and in Canary Islands house is articulated around a patio, in the north, the Meseta and in mountains there is more compact architecture. Constructive materials depend on the availability in the environment; so we find an important build of ground-architecture, stone walls, slate and vegetable roofs. Our communication will go through the diverse Spanish climates and will expound their main architectonic characteristics, making a stand in those constructive aspects and in their bioclimatic strategies. The knowledge of the traditional materials and systems must help us when we occupy in the intervention on one of these architectures we can do it whit the same reliance and security of their constructors not architects when they built them to shelter their home.

At the same time, learning from past, we can apply these teachings on the actual and future architecture. The every time bigger scarcity of energy productive recourses, make we look back to see what solutions were taken in the History of the Architecture in each time and in each place. Whit the application of these teachings we can get the comfort, economy and durability whit a minimum energy cost and so that the important economy of recourses.<sup>7</sup>