

Ugo Tonietti CV

Ugo Tonietti, architect, is associate professor of *Structural Mechanics* at the Faculty of Architecture at the University of Florence.

The research activity developed is inherent in the field of the classical themes of Materials and Structural Mechanics, primarily in the sector that deals with the mechanical behaviour of traditional materials as for instance masonry, stones and earth. The latest part of the scientific activity is addressed to the theoretical-experimental analysis of the behaviour of structural elements realized in traditional building material and to problems that concern the safeguard both of the static efficiency and of physical-mechanics performances of single elements and structural systems in historical buildings. A particular characteristic of the scientific profile is the attention both to technical and structural aspects of existing historical buildings, believed to be important in the choice of the procedures of investigation and modelling-calculation methods for strengthening interventions. In particular, during last years, he studied the mechanical behavior of structural elements such as arches, vaults, domes. A specific research line concerned seismic problems and correlate anti-seismic old devices of ancient cultures, compared with contemporary strengthening strategies. Furthermore the interest for conservation and restoration produced an investigation campaign, through laboratory tests, on the mechanical behaviour of a particular typology of composite materials identified by the use of a cement matrix combined with nets in CFRP or GFRCM whose strengthening capacity is comparable with the traditional composites, but introduces, aspects of compatibility, life, easiness of application and ductility much more preferable for anti-seismic reinforcements on historical structures.

The research activity has been developed with funds from Italian Ministry of University and Research, from Italian C.N.R., from Culture European Programs (Cultura 2000). He took part to many conventions of search with Public Authorities on the problem concerning evaluation of static efficiency of monuments and safeguard of the historical towns (among them: Florence S. Maria del Fiore Dome, Parma Romanic Cathedral, Ascoli Piceno Ancient Square, Palazzo Vecchio in Florence, post Irpinian earthquake countries rehabilitation, Ferrara Walls, Vasari's Madonna dell'Umiltà Dome, Ragusa Ibla ancient historical town).

He designed, together with colleague prof. Silvia Briccoli Bati, the structural reinforcement (post 1997 Italian earthquake) for the XII century Romanic Cathedral in San Leo (Marche, Italy) and then he was charged with the direction of the strengthening works (2002-2006). Recently he attended international research projects on ancient masonry and earthen buildings and towns: Palais du Dey in Algeri, Chefchauen Medina (Marocco), Zagora (Marocco), Elbasan historical town (Albania). Beginning from 2007 he take part in the international team (as consultant for ancient masonry structural problems) that was charged on the part of DAFA (Delegation Archeologique Francoise en Afghanistan) to carry out the design of the restoration (and consolidation) of Hadji Piada ancient Mosque in Balkh (Afghanistan). Then he was in Siwa (Egypt), thanks to a research contract between Florence University and the "Associazione Giovanni Secco Suardo", in order to evaluate the structural repair guide lines for the Middle Aged citadel of Shali (built with an unusual material as the salt blocks). In 2009 with prof. L. Rovero he carried out a pilot conservation action on Shali's ancient city-walls. From 2008, as team leader of the Department of "Costruzioni and Restauro's research unit, studies, on behalf of UNESCO (and WMF too), the static of Lalibela Rock Hewn churches (World Heritage Site, Ethiopia). In particular he carried out the Structural Study for the Pilot Conservation Action Plan on Biet Gabriel Church.

During 2006-7 years he took part, with the research unit of the "Dipartimento di Costruzioni", in the European Culture 2000 Research Project, entitled "Terra Incognita"; subsequently (2008-09 years) he attended to "Cupoles et Habitats" European Culture Project with the team of Florence University.

He participated in the Erasmus courses "Protection du patrimoine architectural contre les séismes" coordinated by prof. M. Sève for the Faculty of Architecture of Mons, Athens, Paris, Florence. In the last years he has held courses of *Strengthening of historical buildings* at the Faculty of Architecture of Rome-La Sapienza and of Florence. He is member of the teacher's college of the PHD in "Materials and structures for the architecture" activated at the "Dipartimento di Costruzioni e Restauro" of the Faculty of Architecture in Florence. In the biennium 2006-07 he was teacher in the post-graduate course on "Restauration et mise en valeur du patrimoine culturel immobilier", invited by the Ministère de l'Enseignement Supérieur et de la Recherche of Algeria". In the last years he is teacher of *Structural problems of monuments and historical buildings* at the Laboratory-course *Earthen and masonry architectures: design, conservation, innovation* near Florence University.

From 2007 he contributes to *LEFT-Avvenimenti* Italian magazine with periodical reportages on Cultural Heritage.