HAL
open science

Wood science and conservation: activities and achievements of COST Action IE0601

Luca Uzielli, Joseph Gril

To cite this version:

Luca Uzielli, Joseph Gril. Wood science and conservation: activities and achievements of COST Action IE0601. Journal of Cultural Heritage, 2012, 13, pp.S1-S5. 10.1016/j.culher.2012.06.001 . hal-00790160

HAL Id: hal-00790160

https://hal.science/hal-00790160v1

Submitted on 19 Feb 2013

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Uzielli L., Gril J. (2012) Wood science and conservation: activities and achievements of COST Action IE0601, Journal of Cultural Heritage, special issue on Wood Science and Conservation, vol. 13, p. S1-S5.

Wood science and conservation: activities and achievements of COST Action IE0601

Luca Uzielli[a], Joseph Gril[b]

[a] DEISTAF, University of Florence, 13 Via San Bonaventura, 50145 Firenze, Italy, luca.uzielli@unifi.it

[b] Laboratoire de Mécanique et Génie Civil, CNRS, Université Montpellier 2, Place E. Bataillon, CC048, 34095 Montpellier cdx 5, France, joseph.gril@univ-montp2.fr

The COST Action

COST Action IE0601 "Wood Science for Conservation of Cultural Heritage (WoodCultHer)"[1] was started in 2007 to promote the science needed for the conservation of wooden cultural heritage. This special issue of Journal of Cultural Heritage being an outcome of that Action, its organisation and activities will be detailed in this introductory paper.

COST, that supported this publication, is an intergovernmental framework for European Cooperation in Science and Technology, allowing the coordination of nationally-funded research on a European level (http://www.cost.eu). COST Actions originate from the need, expressed by European scientists, to promote a specific research subject through the support of mobility during a typical time span of 4 years. Once an Action has been approved and started thanks to the support of a sufficient number of countries, any scientist of the signatory countries is entitled to apply for support to join the proposed activities.

The Action's Memorandum of understanding (MoU) was by the end of the Action signed by 26 COST Countries; in addition, the Action had been joined by institutions from 3 non-COST Countries (Albania, New-Zealand and Japan). Table 4 highlights the European dimension of the Action by showing how the involvement in activities was well spread among countries.

The structure of the Action

The deciding body of a COST Action is the Management committee MC, composed of two scientists from each supporting country[2]. To make the work more efficient however, the activities have mainly been organised by the steering Committee (SC), formed by the Action's chairman Luca Uzielli (IT), vice-chairman Joseph Gril (FR), webmaster Marco Fioravanti (IT), leaders and vice-leaders of the three working groups: Helena Cruz (PT), George Jeronimidis (UK), Roman Kozlowski (PL), Eberhard Lehmann (CH), Thomas Nilsson (SE), Tone Marie Olstad (NO). The SC discussed and prepared policies and future activities to be later discussed by the MC, then it organized and steered meetings and other activities according to the guidelines approved by the MC. The dedication of the SC was essential for the success of the Action.

---

[1] COST Action IE0601 formally started on 18/04/2007, and, thanks to a 6 months extension, ended on 17/10/2011. It was assigned to the COST domain MPNS (Materials, Physical and NanoSciences). The rapporteur to MPNS domain, Zsolt Kajcsos (HU), passed away on 27 July 2011 (see the encadré p.nn) and was replaced in November 2011 by Luciano Mulé Stagno (MT). The Action's activity was supported by Science Officers Piotr Swiatek then Caroline Whelan, and Administrative Officer Milena Stoyanova from COST Office.

2 A complete list of the MC Members, together with many further information, can be found in http://www.cost.eu/domains_actions/mpns/Actions/IE0601.

The Action was formally organized in three working groups: WG1 “Wood Properties”, WG2 “Assessment & Diagnosis”, WG3 “Conservation & Restoration”. Although this division was useful for several organizational aspects, the Action’s activities – due to their interdisciplinary nature – have been mainly carried out through plenary or focused (thematic) meetings.

The main objective of the Action

The main objective of the COST Action IE0601 “WoodCultHer” was to improve the conservation of wooden cultural heritage by increasing the interaction and synergy between wood scientists and other professionals applying wood science and technology towards the study, conservation and restoration of wooden artefacts of artistic or historic interest.

The research areas and activities

The main scientific research area was wood science: wood anatomy, degradation, physical & mechanical properties and timber structures. Other areas important to the Action were: examination methods, non-destructive imaging, (micro-) tomography with several radiation types, strain analysis, surface analysis, treatments and restoration techniques and structural engineering.

The activities supported by COST funding were international conferences (ICs) combined with Management Committee (MC) meetings, focused meetings (FMs), training schools (TSs) and short term scientific missions (STSMs).The ICs (Table 2) gathered annually 70 to 100 scientists covering all areas, with approximately 50-60% of them attending all ICs. Abstracts, articles and presentations from the various meetings were made available on the website of the Action[3], and, in the case of two ICs, the Florence and Braga meetings, final proceedings were produced [1, 2]. FMs (Table 3), with a variety of addressed subjects, gathered specialists to identify state-of-the-art and research needs. All sorts of communication formats were used to produce the highest level of scientific interactions in various contexts. During TSs (Table 4) trainees gathered to learn from experts in a given place and time, while STSMs were a flexible way to encourage individual scientists to visit and train in laboratories in other countries. Both TSs and STSMs were efficient means to diffuse and strengthen high level knowledge and contacts throughout Europe, and worldwide among researchers from several countries.

Whenever possible, interactions with other networks or institutions were organised at the occasion of the collective activities (IC, FM or TS). These are indicated by italics in Tables 2 to 4. It included common activities with COST Action MP0601 “Short Wavelength Laboratory Sources” or COST Action FP0802 "Experimental and Computational Micro-Characterisation Techniques in Wood Mechanics".

The final publication

This final publication reflects many of the activities within the Action. The SC worked as scientific committee and editorial board for the preparation of the present issue, organised into 7 sections. **Section 1**, *Basic wood science for conservation* presents background information on wood in view of conservation needs, with a special focus on aging processes. **Section 2**, *Examining wooden cultural heritage objects* details the most useful techniques for diagnosis and assessment of wooden cultural heritage objects, including advanced radiation and analytical chemistry. Regarding the application to *timber structures*, **Section 3**, a number of guidelines is given for intervention on buildings in general or roof connections in particular, and assessment of biodegradation in open-air museums and other historical monuments. **Section 4** on *painted wood* combines fundamental study of the relation between climate-induced stress and wood properties, and also a proposal to study the

[3] http://www.woodculther.org

gesso damage mechanism; the section includes on-site monitoring of wood movement and paint damage, and conservation measures to control the painting deformation. For *waterlogged wood*, **Section 5**, the process of bacterial degradation has been given special attention, together with recommendations for in-situ preservation of foundation piles or shipwrecks. In **Section 6**, *musical instruments, a* variety of techniques applicable to the study and conservation of musical instruments are described: documentation of sound, monitoring of mass and deformations, X-ray tomography, mechanical analysis of the static and vibrational response of a soundboard. Finally, in **Section 7**, *treatment and retreatment of wooden objects*, a summary of the famous Vasa case is followed by reviews of consolidation techniques, but also assessment of undesirable effect of previous treatments and methods for their identification and removal.

Other achievements

Some important outcomes of the Action did not fit to the chosen format of final publication. These achievements include:

- Guidelines for the on-site assessment of historic timber structures" [3].
- Preparatory document for discussion at CEN (European Committee for Standardisation CEN) /TC 346 (Conservation of cultural property Technical Committee). The two documents prepared by the Action which deal with Waterlogged Archaeological Wood were pre-adopted as potential future new work items at CEN/TC 346 April 2012 meeting in Copenhagen,.
- Preparatory document for discussion at the European Committee for Standardisation, Conservation of cultural property Technical Committee (CEN/TC346). At its 9th meeting held on 29-30 March 2012 in Venice (IT) CEN/TC 346 included in its work programme - among others - the Working Groups WG9 dealing with waterlogged wood, and WG10 dealing with historic timber structures, both intended to start working on documents prepared by our COST Action.
- A database of non-destructive techniques applicable to conservation of wooden cultural heritage prepared by Cité de la Musique, Paris, as a follow up of FM-12 [4].
- The organization of a workshop held in Florence (IT) on 11-13 July 2011, jointly with COST Office, University of Florence and Florens Foundation [5]. COST strategic workshops are instruments typically dedicated to launch new fields of research and relevant topics. The Florence workshop was proposed to stimulate discussions highlighting the cultural, social and economical importance of cultural heritage, to strengthen a European "research area" in this field by suggesting research topics for the 8th EC framework program, and to inform political stakeholders on the necessity to support research and European co-operations.

This Action has indeed been a "success story". It has gathered a group of enthusiastic researchers, from most European Countries, sincerely interested in the field of Wood Science for Conservation of Cultural Heritage and of applying and developing the outcome of the Action to the benefit of the WCHOs . There has been a lot of networking, interdisciplinary contacts, new cooperation which will continue after the Action's end.

References

[1] L. Uzielli (ed), Wood Science for Conservation of Cultural Heritage – 1 – Proceedings of the International Conference held in Florence (Italy), 8-10 November 2007, Firenze university press, Florence, 2009. ISBN: 978-88-8453-382-1 (http://www.fupress.com/Archivio/pdf/4099.pdf)

[2] J. Gril (ed), Wood Science for Conservation of Cultural Heritage – 2 – Proceedings of the International Conference held in Braga (Portugal), 5-7 November 2008, Firenze university press, Florence, 2010. ISBN: 978-88-6453-165-6 (http://www.fupress.com/Archivio/pdf/4502.pdf)

[3] Cruz H., D. Yeomans, E. Tsakanika, N. Machioni, A. Jorissen, M. Touza, M. Mannucci, P. Lourenço, Guidelines for the on-site assessment of historic timber structures, submitted to Journal of Architectural Heritage.

[4] Leconte, S., Survey of non-destructive techniques applicable to conservation of wooden cultural heritage: a data base, Journal of Cultural Heritage, Special issue on Wood science and conservation, 2012

[5] M. Fioravanti and S. Mecca (Eds.), The Safeguard of Cultural Heritage – A challenge From The Past for the Europe of Tomorrow, Firenze University Press, 2011, ISBN: 978-88-6655-058-7 (http://www.fupress.com/eng/scheda.asp?IDV=2173)

Table 1 - European dimension of COST Action IE0601 activities

Action's countries		host of meeting				STSM	
		MC/IC	FM	TS	SC	(out)	(in)
Austria	AT					1	
Belgium	BE	2				1	
Switzerland	CH			1	1	1	3
Czech Rep.	CZ		1			1	
Germany	DE	1		1	1	2	
Denmark	DK		1				1
Estonia	EE						
Spain	ES		1				
Finland	FI		1				1
France	FR	1	4	1	2	3	4
Greece	GR						
Hungary	HU						
Italy	IT	1	2	2		10	5
Latvia	LV						
Macedonia	MK						
Malta	MT						1
Netherlands	NL						
Norway	NO		1		1		4
Poland	PL		2			3	2
Portugal	PT	1	1		1		1
Romania	RO					2	
Sweden	SE					2	1
Slovenia	SI						
Slovakia	SK						
Turkey	TR	1			1		
United K.	UK		1		1	2	5

MC: management committee; IC: international conference; FM: focused meeting; TS: ttraining school; SC: steering committee; STSM: short term scientific mission; (out): country of grantee; (in): country of host laboratory.

Table 2 - MC meetings and international conferences of COST Action IE0601

MC-1	Brussels (BE)	18/04/2007	Kick-off meeting
MC-2	Tervuren (BE)	8-9/06/2007	Get-to-know meeting
MC-3 +IC-1	Florence (IT)	8-10/11/2007	Wood science for preservation of cultural heritage
MC-4 +IC-2	Braga (PT)	5-7/11/2008	Wood science for preservation of cultural heritage: mechanical and biological factors *(jointly with European Society for Wood Mechanics)*
MC-5 +IC-3	Hamburg (DE)	20-22/10/2010	Wooden Cultural Heritage: Evaluation of Deterioration and Management of Change
MC-6 +IC-4	Izmir (TR)	14-16/11/2011	Interaction between Wood Science and Conservation of Cultural Heritage
MC-7 +IC-5	Paris (FR)	14-16/11/2011	Final conference and session 'Photon technologies for conservation of wooden cultural heritage'*(jointly with COST Action MP0601)*

Table 3 - Focused meetings of COST Action IE0601

FM-01	Metz (FR)	29-31/05/2008	"Preservation-restoration of wooden structures built heritage practical application" *(jointly with ICOMOS Workshop)*
FM-02	Prague (CZ)	30-31/03/2009	Consolidation, reinforcement & stabilization of decorated wooden artefacts
FM-03	Krakow (PL)	2-3/04/2009	Diagnosis and conservation of wooden cultural heritage: necessary European standardization within CEN TC 346 'Conservation of Cultural Heritage'
FM-04	Cambridge (UK)	27-28/04/2009	Managing environmental risks to wooden interiors and collections in historic buildings and churches *(jointly with English Heritage and National Trust)*
FM-05	Florence (IT)	21-22/05/2009	Structural typologies and conservation of old timber structures *(jointly with European Project "Les Toits de l'Europe II")*
FM-06	Oslo (NO)	18-19/02/2010	Allowable microclimatic variations for polychrome wood *(jointly with European EEA Project "Establishing standards for allowable microclimatic variations for polychrome wood")*
FM-07	Krakow (PL)	12-13/04/2010	Modelling mechanical behaviour of wooden cultural objects *(jointly with COST Action FP0802)*
FM-08	Biarritz (FR)	11/05/2010	Deterioration of wooden heritage structures in outdoor exposure: diagnosis and conservation *(jointly with IRG WP – International Research Group on Wood Protection)*
FM-09	Florence (IT)	17/12/2010	Planning synergy activities between COST Actions IE0601 and MP0601
FM-10	Copenhagen (DK)	27-28/01/2011	Preparing standards for conservation of waterlogged archaeological wood
FM-14	Vantaa(FI)	30-31/05/2011	
FM-11	Ourense (ES)	24-25/02/2011	Preparing standards for assessment of old timber structures
FM-13	Lisbon (PT)	16-17/05/2011	
FM-12	Paris (FR)	06-07/05/2011	Preparing a catalogue of "Non-destructive techniques to study wooden cultural heritage objects"

Table 4 - Training schools of COST Action IE0601

TS-1	Genova (IT)	10-15/09/2007	Science and technology for the cultural heritage *(participation to interdisciplinary multi-Actions TS)*
TS-2	Hamburg (DE)	16-20/03/2009	Wood-destroying insects and decay fungi in and moulds on wooden cultural heritage objects and constructions *(jointly with HTB/vTI, Hamburg)*
TS-3	Villigen (CH)	16-20/11/2009	Advanced radiography methods in wood research *(jointly with Paul Scherrer Institute, CH)- ADRAM09*
TS-4	Saclay (FR)	27-31/05/2010	New lights on ancient materials *(jointly with COST Action MP0601 and IPANEMA)*
TS-5	Florence-Pisa (IT)	16-20/05/2011	Wood cultural heritage conservation: advanced X-ray and optical techniques *(jointly with COST Action MP0601)*