



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Centre de Recerca per a la Història de la Tècnica
Càtedra UNESCO de Tècnica i Cultura
Universitat Politècnica de Catalunya - Barcelona Tech

General Secretariat



atlantacongress
professional congress organisers

Calvet, 55 - 08021 Barcelona, Spain
Tel. +34 933 672 420
Fax +34 934 146 817
congressbcn@atlanta.es

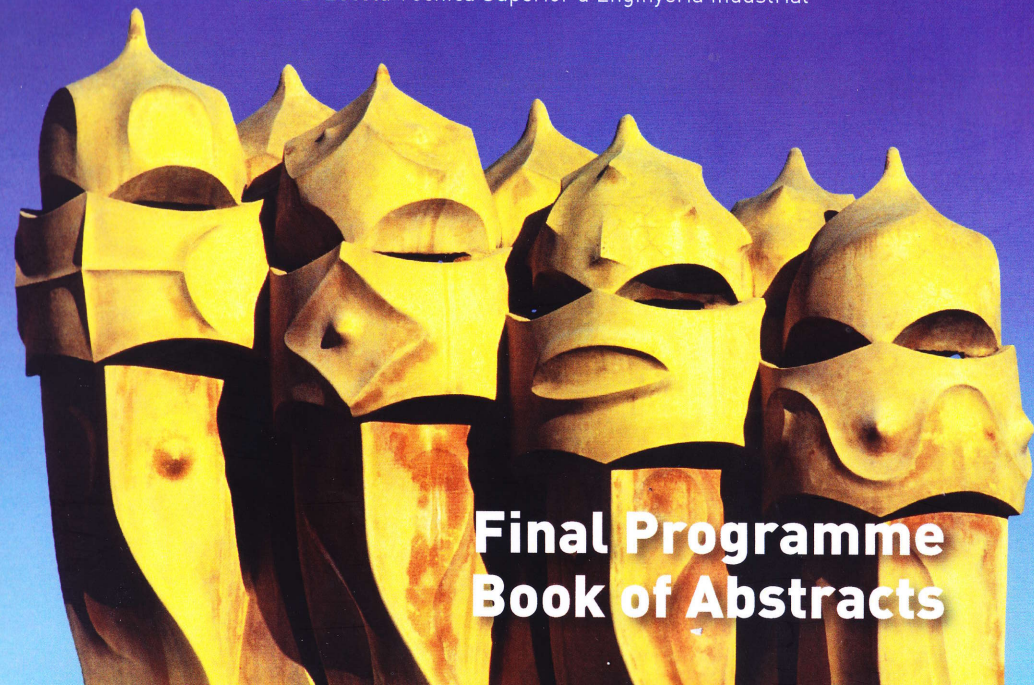
www.icohtec.org

39th ANNUAL MEETING

ICOHTEC

Technology, the Arts & Industrial Culture

10-14 July 2012 - Barcelona, Spain
ETSEIB-Escola Tècnica Superior d'Enginyeria Industrial



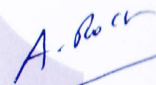
Final Programme
Book of Abstracts

Foreword

The 39th Annual ICOHTEC Meeting will be held in Barcelona, Catalonia - Spain on 10-14 July 2012. The main theme of this edition will be **Technology, the Arts & Industrial Culture**. The aim is to examine technology in a multidisciplinary framework.

Barcelona with its rich industrial history, outstanding architecture and ample collections of the arts will be an excellent site for examining the interactions of technology with the arts, structural and form design as well as culture in general.

On behalf of the Local Committee we welcome all the participants, with the wish that they enjoy their stay in Barcelona and that the symposium be fruitful.



Antoni Roca-Rosell
Local Organising Committee, President

Congress Image

The image of the symposium corresponds to the **roof of the Pedrera** with its chimneys, ventilation shafts and "badalots" (roof casings of the stairwells), where Gaudí used the timbrel vault, covering them in most cases with a "trencaçadís" (ceramic mosaic that adapts to curved surfaces).

The **timbrel vault** is, in fact, a genuine ancient technique used for covering spaces with "maó de pla" (flat bricks); also called "Catalan brick" because it was widely used during the XIX century in Catalonia. Gaudí took this technique to its highest expression.



Contents

Foreword	02
Committees	05
Programme at a glance	06
Meeting Schedule	
Tuesday, 10 th July	14
Wednesday, 11 th July	14
Thursday, 12 th July	22
Friday, 13 th July	28
Saturday, 14 th July	34
Sunday, 15 th July	39
Abstracts	
Kranzberg Lecture	40
Symposia	
S1. Modernity on Display: Technology, Science and Ideology at International Expositions circa World War II	41
S2. Depicting Engineering: Portrayal of the Engineer in the Modern Era	43
S3. Architectures and Technologies of Sound	46
S4. Sport, Leisure and Play: Science, Technology and Culture	47
S5. Before and after Chernobyl: Technological Risks as Social and Ethical Problem	54
S6. Functionality of Homes and Their Appliances—Challenges for Design, Technology and Production I	58
S7. Technological Cityscapes: Barcelona around 1900	61
S8. Fuel and Energy Complex in the Arts and Social Life	65
S9. 7 th Annual ICOHTEC Symposium on Social History of Military Technology	68
S10. Print Technology and Early Modern Visual Culture	76
S11. Architectural Transformations in the Information Age	77
S12. Technical Education in Spain in the Eighteenth and Nineteenth Century	80
S13. Functionality of Homes and Their Appliances—Challenges for Design, Technology and Production II	81
S14. Telecommunications: National Systems and International Organizations	83
S15. Art, Science and Technology for Public Understanding and Media Representation of Technology in XIX-XXI Centuries	86

Contents

S16. Displaying Ideas About Technology	88
S17. From Camera Obscura to Drawing Machines and Animated Cartoons (in Spanish)	89
S18. From Pythagoras to Trains and Telephones (in Spanish)	91
S19. Cultural Characters, Architectural Language and Art of the War (in French)	92
S20. Transport: Steamships, Railroad Technology and Cars	93
S21. Robot-humans and Humanlike Robots	95
S22. (Reuse of) Industrial Heritage	96
S23. Exemplary Artefact Studies	100
S24. Sound, Music & Silence	104
S25. Images of Technology and Science	105
S26. Computer Graphics & Design	110
S27. Built Environment and Technological Modernization	112
S28. Materials: Iron & Sheet Metal	114
S29. Films as Historical Sources	116
S30. Education and Teaching	117
S31. Technologies of Buildings	120
S32. Artistic Interpretations of Technology	121
S33. Aesthetic Reception of Technology	123
S34. Climate Change and Renewable Energy	126
S35. Design, Architecture and Technology	128
S36. Planning, Building and Restoring Infrastructure	131
S37. Technology - Autonomous, Communicating or Integrated Power in History	132
S38. Design, Education and Technology	134
S39. Reproducibility and Standardisation	136
S40. Technological Literacy and Concepts	137
Posters	139
Useful Information	
Venues	143
How to get to the ETSEIB	144
ETSEIB plan	145
General Information	146



Committees

Programme Committee

Chair ▶ Jan Kunnas

Nina Möllers
Markku Norvasuo

Masaaki Okada
Antoni Roca-Rosell

Local Organising Committee

Antoni Roca-Rosell ▶ President

Universitat Politècnica de Catalunya. Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Barcelona

M. Rosa Massa-Esteve. Universitat Politècnica de Catalunya. Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Barcelona

Carles Puig Pla. Universitat Politècnica de Catalunya. Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Barcelona

Jaume Valentines. Universitat Politècnica de Catalunya. Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Barcelona

Eusebi Casanelles. Museu Nacional de la Ciència i de la Tècnica. Associació del Museu de la Ciència i de la Tècnica i d'Arqueologia Industrial de Catalunya, Barcelona

Àngel Calvo. Universitat de Barcelona. Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Barcelona

Bernardo Revuelta. Fundación Juanelo Turriano, Madrid

Local Organisation

The **Local Committee** gathered people from several academic centres and institutions involved in the history of technology in Barcelona and Spain. Several members belong to the **Universitat Politècnica de Catalunya-Barcelona Tech**, in which they form part of the **Centre of Research for the History of Technology** (Centre de Recerca per a la Història de la Tècnica, CRHT) and of the **UNESCO Chair for Technology and Culture**. Other members represent the **National Museum of Science and Technology of Catalonia** (mNACTEC), the **Catalan association of industrial archeology** (AMCTAIC), and the **Juanelo Turriano Foundation**, this latter being an institution committed to ICOHTEC from many years.

Thus, the **following entities give support** to the 39th ICOHTEC Symposium:

Universitat Politècnica de Catalunya – Barcelona Tech ▶ <http://www.upc.edu>

Centre de Recerca per a la Història de la Tècnica

Càtedra UNESCO de Tècnica i Cultura ▶ <http://cutc.upc.edu/>

Societat Catalana d'Història de la Ciència i de la Tècnica, Institut d'Estudis Catalans (Catalan Society for the History of Science & Technology, Institute for Catalan Studies) ▶ <http://schct.iec.cat/>

Museu Nacional de la Ciència i de la Tècnica de Catalunya (mNACTEC) ▶ <http://www.mnactec.cat/>

Associació del Museu de la Ciència i de la Tècnica i d'Arqueologia Industrial de Catalunya (AMCTAIC) ▶ <http://www.amctaic.org/>

Fundación Juanelo Turriano ▶ <http://www.juaneloturriano.com/>

broader questions about today's ultra-realistic Japanese and American silicone and electronic female robots: What happens when we can no longer tell the difference between an artificial woman (or man) and a real one?

The presentation expands the direction first taken in Julie Wosk's *Alluring Androids, Robot Women, and Electronic Eves* and her talk that was taped by PBS Channel Thirteen Television in New York, and draws on recent research being used for her new book on female androids and robots (forthcoming, 2013).

HUMAN-ROBOT / ROBOT-HUMAN. PROCESSES OF CULTURAL CHANGE BROUGHT ABOUT BY DIGITAL REVOLUTION. A NEW ERA IN THE HISTORY OF MANKIND

Dr. Anna Pujadas Matarin, Spain

This paper seeks to examine the progressive spread of the interaction of humans and machines, and especially the possibility of developing robots that can reproduce human behavior and intelligent behavior.

Increasingly, we tend to incorporate technology and machinery in our own body, to the point of making robots more and more human machines, and turn humans into machines increasingly similar to the robots (cyborgs).

2009. Robotics. Geminoid HI-1. Hiroshi Ishiguro, Osaka University. Robot built to look like its male co-creator. <http://www.is.sys.es.osaka-u.ac.jp/index.en.html>

2008. Intelligent Fabrics. Dermo Smart Peptide Delivery, CETEMMSA, Barcelona. Controlled release of active agents disposed on an intelligent support (a smart textile patch) <http://www.cetemmsa.com/investigacion.php?id=000000014E&lang=en>

2010. Nanomedicine. CMOS. Instituto de Microelectrónica de Barcelona IMB-CNM (CSIC CMOS is a way to implant minute silicon chips into living cells and use them as intracellular sensors. <http://onlinelibrary.wiley.com/doi/10.1002/smil.200901041/abstract>

2010. Synthetic genomics. M. mycoides JCVI-syn1.0. JCVI, J. Craig Venter Institute, Rockville, California. The first cell controlled completely by a synthetic genome. <http://www.sciencemag.org/content/329/5987/52.abstract>

Some Androids & Gynoids (humanoid robots). 1999. AIBO, Sony. / 2000. Asimo. Honda. / 2000. E.M.A. Segatoys. / 2002. Robonaut 1 B. NASA's Johnson Space Center. / 2003. QRIO, Sony. / 2003. / Actroid, Kokoro Company. / 2003. EveR-1. IIT Korea. / 2004. Nao. Aldebaran Robotics, Paris. / 2005. HUBO. Korea Advanced Institute of Science and Technology (KAIST). / 2005. TOPIO ("TOSY Ping Pong Playing Robot"). TOSY, Vietnam. / 2005. Enon ("Exciting Nova On Network"). Fujitsu, Japan.

From the perspective of the so-called NBIC convergence (the union of the fields of Nanotechnology, Biotechnology, Information Technology and Cognitive Science) rapid recent progress in cognitive science and related fields open new possibilities for the transformation of our species, modified in a post-human life, in which artificial intelligence, genetics and robotics are shaping a new era in the history of mankind (NBIC 2002 Report. U.S. National Science Foundation and Department of Commerce). The aim of this paper is to offer further perspectives and reflections on new patterns of social relations to be established in this context where borders between people and machines will become less clear. For this purpose the paper follows the concept of "cultural change" and "ecological niche" as developed by recent anthropological studies (Toshisada Nishida, Jean-Pierre Warnier). With them the paper makes an assessment of the so-called "emergence of new species", which has generated heated discussions in relevant journals (*Technological Forecasting and Social Change*, 2006: 95-127).

S22 ▶ (REUSE OF) INDUSTRIAL HERITAGE

Session Organiser ▶ the Programme Committee

REGIONAL APPROACHES TO THE INDUSTRIAL HERITAGE: THE URAL'S CASE

Researcher Anatoly Kurlaev, Russia

The sites of the industrial era are steadily perceived in Russia as part of the historical and cultural heritage. Research leader of industrial heritage in Russia is the Urals -the mountain