

# Sixth International Congress on Construction History, Brussels, 9-13 July, 2018

Program overview (version June 9, 2018)

	Monday	Tuesday	Wednesday	Thursday	Friday	
9h00	Registration	<b>3. Open session</b> Medieval Vaults Towers & Tall buildings Nervi & Ferrocement Warehouses & Factories Vernacular & Earth	Visits half day and full day tours	<b>6. Open session</b> Gothic vaults & Spires Materials & Forms Representation Stone, gypsum and brick	<b>9. Open session</b> Contractors 19th C Church building Trades & Contracts Forts & Castles Modernity & Locality	
10h00	<b>Opening</b>	Coffee break		Coffee break	Coffee break	
11h00	<b>Keynote</b> Thomas Coomans	<b>Keynote</b> Robert Thorne		<b>Keynote</b> Werner Lorenz	<b>Keynote</b> Tullia Iori	
12h00	Lunch time	Lunch time		Lunch time	Lunch time	
13h30	<b>1. Open session</b> (Alternative) Sources Timber Vaults & Arches Iron & Steel	<b>4. Open session</b> Policy & Politics Timber & Iron Baroque Vaults Mass Housing		<b>7. Open session</b> Regulations Concrete Bridges 1 Building services	<b>10. Open session</b> Egypt & Antiquity Innovations in concrete Bridges 2 Contractors 20th C	
15h30	Coffee break	Coffee break		Coffee break	Coffee break	
16h00	<b>2. Thematic session</b> Building maintenance Early thin shells (1/2) Modern comfort	<b>5. Thematic session</b> Experts Historic precast concrete Transnational exchange		<b>8. Thematic session</b> Architects and bureaucrats Early thin shells (2/2)	<b>Closing session &amp; awards</b>	
18h00						
20h00	Welcome reception	Event for PhD students			Gala dinner	

# Sixth International Congress on Construction History, Brussels, July 9-13 2018

Program (version June 11, 2018)

<b>MONDAY July 9, 2018</b>	
	Registration
	<b>Opening</b>
	<b>KEYNOTE</b>
11h00	<b>Thomas Coomans: East Meets West on the Construction Site. Churches in China 1840s-1940s</b>
	Lunch time
13h30	<b>1. OPEN SESSION - 4 parallel sessions</b>
	<p><b>1a (Alternative) sources for Construction History</b> <small>chair to be confirmed</small></p> <p>Constructive culture in the transition from the nineteenth to the twentieth century. Contributions of Alfredo de Andrade (1839-1915) to construction history, across Italy and Portugal <small>Teresa Cunha Ferreira</small></p> <p>Doors in English published books on architecture and building construction 1550-1800 <small>Karey L. Draper, James W.P. Campbell</small></p> <p>Geometry on paper and on the ground in the last third of the seventeenth century. Leclerc's and Manesson-Mallet's contribution and influence <small>Javier Giron</small></p> <p>Transfer of knowledge through books and prints: Jesuit design for the Western buildings and fountains in the Yuanmingyuan in Beijing <small>Hermann Schlimme</small></p> <p>Hydrotechnical models of the 'Modellkammer' (chamber of models) in Augsburg, Germany <small>Raimund Mair, Christiane Weber</small></p>
	<p><b>1b Timber construction</b> <small>chaired by David Yeomans</small></p> <p>The caisson – review of a unique wooden construction typology in China <small>Corentin Fivet, Jingxian Ye, Peilang Xu</small></p> <p>Historic timber framed courtyard houses: origin and development of the <i>corralas</i> in Madrid (1494-1908) <small>Esperanza González-Redondo</small></p> <p>Sixteenth-century development from common rafter roofs to ridge purlins in Leiden (NL) <small>Edwin Orsel</small></p> <p>Wooden survey towers in Germany <small>Philip S. C. Caston</small></p> <p>The Munich state opera house. Constructing between tradition and progress at the beginning of the nineteenth century <small>Clemens Knobling</small></p>
	<p><b>1c Vaults, arches and structural design and analysis</b> <small>chaired by David Wendland</small></p> <p>The graphic statics of the systems of space by Benjamin Mayor <small>Thierry Ciblac</small></p> <p>Inquiring into the structural identity of the <i>Sala dei Baroni</i> vault <small>Maria Teresa Como</small></p> <p>Arch bridge design in eighteenth-century France: the rule of Perronet <small>Santiago Huerta Fernández</small></p> <p>The dome of Saint-Paul-Saint-Louis in Paris, a historical and structural analysis <small>Laurens Moubax, Krista De Jonge</small></p> <p>Assessing geometrically the structural safety of masonry arches <small>Jean-François Rondeaux, Aurélie Deschuyteneer, Denis Zastavni</small></p>
	<p><b>1d Iron and steel construction</b> <small>chaired by Tom Leslie</small></p> <p>The rise and fall of the cast iron breast panel in Britain (c. 1906-60) <small>Jonathan Clarke</small></p> <p>Experimental school constructions by Jean Prouvé. The benefit of closed prefabrication <small>Adrian Leander Pöllinger</small></p> <p>Steel heritage: Olivetti's factories in Ivrea in the fifties and sixties <small>Danilo Di Donato, Renato Morganti, Alessandra Tosone, Matteo Abita</small></p> <p>TPI – the Italian popular theatre: an architectural, technological and building experiment of a space in motion <small>Alessandra Como, Luisa Smeragliuolo Perrotta, Simona Talenti, Annarita Teodosio</small></p> <p>The evolution of the cast node of the Pompidou Centre: from the 'friction collar' to the 'gerberette' <small>Boris Hamzeian</small></p>
	Coffee break
16h00	<b>2. THEMATIC SESSION - 3 parallel sessions</b>
	<p><b>2a Building maintenance in ancient times (up to the early modern period)</b> <small>chaired by Philippe Bernardi, Charles Davoine, Hélène Dessales, Maxime L'Héritier</small></p> <p>Maintenance of the parietal coverings in ancient Rome: confrontation between legal norms and archaeological evidence <small>Pauline Ducret, Mathilde Carrive</small></p> <p>Maintaining an <i>atrium</i> house during the principate in Ostia <small>Grégory Mainet</small></p> <p>Municipal management of wooden bridges in the fifteenth century: Pont de la Daurade in Toulouse and Pont Notre-Dame in Paris <small>Cécile Sabathier, Nicolas Moucheront</small></p> <p>Regular building maintenance and long-term conservation in ancient times <small>Maxime L'Héritier, Charles Davoine, Hélène Dessales, Philippe Bernardi</small></p>
	<p><b>2b Modern 'comfort' in colonial/postcolonial settings beyond the 'centre/periphery' framework</b> <small>chaired by Johan Lagae, Jiat-Hwee Chang</small></p> <p>Viet-cool: thermal comforts in Vietnam <small>Andrew Cruse</small></p> <p>Cross-cultural thermal knowledge: the case of large-scale tobacco barns in Sumatra (Indonesia) <small>Sascha Roesler</small></p> <p>Detropicalizing comfort research: the climate and house design program in Australia (1945-47) <small>Daniel Ryan</small></p>
	<p><b>2c Early thin shells - players, impulses, and effects (1/2)</b> <small>chaired by Roland May</small></p> <p>The first concrete dome in Germany? A church building using modern techniques <small>Jörg Rehm</small></p> <p>Hangars built of concrete reinforced in various ways, 1908-21: toward a majestic nave without ribbing <small>Beatrice Lampariello</small></p> <p>Oldest surviving hangars with shallow domes (1918) <small>Christina Czymay</small></p> <p>Thin concrete shells by Eugène Freyssinet <small>Bernard Espion</small></p>
	<b>Welcome reception in Brussels Town Hall</b>

## TUESDAY July 10, 2018

9h00

### 3. OPEN SESSION - 5 parallel sessions

#### 3a Medieval vaults chaired by Santiago Huerta

Reverse engineering marvellous machines: the design of Late Gothic vaults from concept to stone planning and the prehistory of stereotomy David Wendland, Marie José Ventas Sierra

Two- and three-dimensional geometry in Tierceron vaults: a case study of Exeter cathedral Alexandrina C. Buchanan, Nicholas J. Webb

King's College Chapel: the geometry of the fan vault Jacques Heyman

Knowledge transfer in the early medieval art of vaulting in Dalmatia Marina Simunic Bursic

#### 3b Nervi and ferrocement chaired by Ilaria Giannetti

Influences of the engineer Pier Luigi Nervi on the work of the architect Marcel Breuer Miguel Á. Calvo-Salve

Pier Luigi Nervi and Fiat. The expansion of Officine Mirafiori in Turin Laura Greco

Pier Luigi Nervi's idea of "*verità delle strutture*" Patricia Radelet-de Grave

Education on the production chain: Lelé's transitory schools in Brazil Adalberto Vilela

#### 3c Towers and big buildings chair to be confirmed

Porto tower buildings in the 1960s: challenges to architects and engineers Rui Fernandes Póvoas, Clara Pimenta do Vale Quintã

Innovations in the structural systems in tall buildings in Bogota during the decade of the sixties - case study: Bavaria building Camilo Villate Matiz

Interdisciplinary research on the heritage of housing complexes in France (1945-75) Raphaël Labrunye, Gauthier Bolle, Karim El Alami, Ignacio Requena, Daniel Siret

Concrete capital: John McShain's Construction of Washington, DC (1930-70) Vyta Baselice

#### 3d Warehouses and factories chaired by Sara Wermiel

Built to stock. Versatility of Hennebique's urban warehouses in Belgium (1892-1914) Ine Wouters, Stephanie Van de Voorde, Marianne De Fossé, Inge Bertels

At the intersection of foreign building know-how: Plovdiv in the early twentieth century Iva Stoyanova

The construction of Ghent's textile industry warehouses Marianne De Fossé, Inge Bertels, Ine Wouters, Linda Van Santvoort

#### 3e Vernacular architecture and earthen buildings chaired by Chang-Xue Shu

Earthen buildings in Ireland Alejandro Jiménez Rios, Dermot O'Dwyer

Nubia vernacular: the villages of Bigge Bernadeta Schäfer

Earthen mortar walls in Cremona: the complexity and logic behind a construction technique Angelo Giuseppe Landi

Adobe constructions in Yun-lin county, Taiwan Pierre Smars

Coffee break

#### KEYNOTE

11h00

Robert Thorne: The rebuilding of the Crystal Palace 1851-54: permanent and better?

Lunch time

13h30

### 4. OPEN SESSION - 4 parallel sessions

#### 4a Timber and iron structures (18th-20th centuries) chaired by James Campbell

Beyond Grubenmann: Swiss carpentry 1750-1850 Jasmin Schäfer, Stefan M. Holzer

Joining techniques in nineteenth- and early twentieth-century Belgian timber roofs Louis Vandenabeele, Inge Bertels, Ine Wouters

What hides behind the plaster? Hollow-brick and iron vaults in Europe between the eighteenth and the twentieth century Paola Condoleo

The roof of the Marble Palace in Saint-Petersburg: a structural iron ensemble from the 1770s Aleksandra Kosykh, Werner Lorenz, Konrad Frommelt

Iron roof structures by Bosshard & Cie: case studies in Switzerland Aikaterina Maria Chalvatzi, Stefan M. Holzer

#### 4b Policy and politics chaired by Christine Wall

Gustave Andreas Royers (1848-1923), from Antwerp city engineer to Belgian politician Inge Bertels

Competing visions of community, commerce and construction in the first Ohio River railroad bridge David A. Simmons

Documenting depression-era construction: the University of Virginia's PWA buildings Benjamin J. Hays

Production of major public works in Brazil: from the scenes in documentaries from 1950-70 to an interrogation about the contemporary specificities of state-company relations Guilherme Moreira Petrella, Carolina Heldt D'Almeida

Recent geopolitics of construction - origins and consequences Andrew Rabeneck

#### 4c Vaulting during Renaissance and Baroque chaired by Paula Fuentes

Alonso de Vandelvira's approach to the geometrical design of templates for *caissons* in *crossing trellis vaults* María Aranda Alonso

The vaulted system of the Basilica of S. Ambrogio in Milan: a cross-feature in the Basilica's life. Restorations and interpretations Chiara Stanga, Chiara Spinelli

Knowledge transfer in vaulting. The Assier church and Valencian stonecutting Pablo Navarro-Camallonga, José Calvo-López, Miguel Ángel Alonso-Rodríguez

The vaulted roof of San Vittore in Milan: an unusual sixteenth-century construction Alberto Grimoldi

#### 4d Modern architecture and construction chaired by Rika Devos

The thirties summer holiday camps in the Abruzzo region: from design to building Alessandra Tosone, Renato Morganti, Alessandra Bellicoso

Luigi Moretti and the program of the *case albergo* in Milan (1947-1950) Roberta Lucente, Laura Greco

Innovation of construction systems versus reproducibility of the architectural image. Multiple constructional processes in the 'Unité d'Habitation' (1945-67) Franz Graf

The first Luanda's skyscraper: comfort through natural and artificial control methods Ana Tostões, Margarida Quintã

Exploring the visual material within the building process of the Villa Savoye Veronique Boone, Bénédicte Gandini

Coffee break

16h00

## 5. THEMATIC SESSION - 3 parallel sessions

**5a Experts and building assessments. An international comparison (thirteenth-twentieth century)** chaired by Robert Carvais, Valérie Nègre

Siena 1357. The failure of a great plan Klaus Tragbar

The public architect's role as surveyor of the construction site in the nineteenth century: the example of Belgian provincial architects Jeroen Cornilly

The engineer as expert: early structural forensic reports in the United States Donald Friedman

Surveyors and building appraisals. Conceptualizing a comparative project (thirteenth—twentieth centuries) Robert Carvais

**5b Historic precast concrete** chaired by Herdis A. Heinemann

Building breakwaters with precast concrete blocks (1834-67) Stefan M. Holzer

Concrete matter: building the Bruges submarine pens (1917-18) Willem Bekers, Ronald De Meyer

Stone and concrete: a review of the coevolution of the surface finishes of two buildings materials Herdis A. Heinemann, Wido J. Quist

The NEMAVO Airey system: a wealth of options Lidwine G.K. Spoormans, Hielkje Zijlstra, Wido J. Quist

Prefabricated elements and typification in communist Poland Piotr Marciniak

**5c Transnational exchange in the construction worlds of nineteenth and twentieth century Asia: the diffusion of materials and processes in the Global****South** chaired by Amit Srivastava, Peter Scriver

"Elle pousse, la Capitale Champignon!" Questioning skill in the Belgian Congo's building industry Robby Fivez

Construction technology transfer in Shanghai in the nineteenth to twentieth centuries Jingxian Ye, Corentin Fivet

Cement and 'Shanghai plaster' in British Hong Kong and Penang (1920s-1950s) Chun Wai Charles Lai

Learning from the 'other': early modern emulation and trans-imperial exchange of 'native' building technologies Pedro Guedes

Special event for PhD students only

WEDNESDAY July 11, 2018

Fieldtrips to Brussels, Antwerp, Bruges, Liège (<http://www.6icch.org/trips.html>)

THURSDAY July 12, 2018

9h00

## 6. OPEN SESSION - 4 parallel sessions

**6a Gothic vaults and spires** chaired by Pierre Smars

Iron on top. The use of wrought iron armatures in the construction of late Gothic openwork spires Christian Kayser

Abandonment of sexpartite vaults: construction difficulties and evolution Rocío Maira Vidal

Late Gothic constructions in Mústair and Meran Manuel Maissen, Martin Gantner, Stefan M. Holzer

Late Gothic system in the church of Saint-Séverin (Paris) Enrique Rabasa-Díaz

**6b Materials and forms** chaired by Stephen Buonopane

New experiences with reinforced tile for Eladio Dieste when building the Cristo Obrero Church Mónica Silva-Contreras

Braided rope with vegetable fibers for the construction of the Inca bridge of Q'eswachaka (Peru) Eugenia Muscio, Jesús Anaya Díaz

Frederick Lanchester and the invention of the air-supported roof Will McLean

**6c Representation and official architecture** chair to be confirmed

The institutional organisation of Belgium's cellular prison building campaign (1830-WWI) Jozefien Feyaerts

The Chinese teahouse at the 1873 Vienna world exposition Alexandra Harrer

Catetinho: the first presidential house in Brasília, Brazil Marina M. Mennucci, Pedro P. Palazzo

Business-card buildings: corporate architecture and promotional strategies in buildings and projects for Eternit in Belgium (1955-75) Stephanie Van de Voorde, Rika Devos

**6d Stone, gypsum and brick** chaired by Joao Mascarenhas-Mateus

Fire brick in China: from mining to architecture Chang-Xue Shu, Ying-Bing Fang

Sturdy as stone, vibrant as ceramics: Italklinker and Modern Movement architecture in Italy Emilia Garda, Marika Mangosio

Study of traditional gypsum in Spain: methodology and initial results Vincenzina La Spina

Nineteenth-century stone protection: the invention and early research on fluosilicates and their dispersion into Europe Timo G. Nijland, Wido J. Quist

Coffee break

KEYNOTE

11h00

Werner Lorenz: 152 Tons of Bronze – the Metal Roof Truss of the Pantheon's Portico in Rome

Lunch time

13h30

## 7. OPEN SESSION - 4 parallel sessions

**7a Concrete construction in 20th century**

chaired by Jos Tomlow

The mushroom column: origins, concepts and differences [Andreas Thuy](#), [Mario Rinke](#)Hidden modernity: reinforced concrete trusses in Brussels parish churches (1935-40) [Romain Wibaut](#), [Thomas Coomans](#), [Ine Wouters](#)Handmade' pre-cast concrete: the Italian experience between structural engineering and industrial design (1950-80) [Ilaria Giannetti](#)Onsite precast concrete: a critical approach to concrete in the faculty of engineering, Prince of Songkla University, Thailand [Pinai Sirikiatikul](#)The hyperbolic paraboloids of the Tor di Valle racetrack in Rome [Stefania Mornati](#)**7b Regulations and specifications**

chaired by Heidi Deneweth

Contracting blunders and innovative regulations of US military construction 1861 to 1918 [Jeffrey L. Beard](#)From master builder to subcontractor: the Guastavino Company and the role of specifications [Jessica Garcia Fritz](#)Recommended minimum requirements for small dwelling construction'. A forgotten ancestor of the modern USA building code [Nigel P. Isaacs](#)Specifications and the standardisation of Ireland's local harbours [Elizabeth Shotton](#)Victor Horta and building site photography [Dirk Van de Vijver](#)**7c Bridges 1 - constructional aspects**

chaired by Dario Gasparini

Innovative or derivative? The design of the bridge structures on the world's first intercity railway between Liverpool and Manchester [Mike Chrimes](#)Iron bridges for Rome, the capital of the Kingdom of Italy [Renato Morganti](#), [Alessandra Tosone](#), [Matteo Abita](#), [Danilo Di Donato](#)European iron bridges in Puerto Rico: the example of the Guamaní bridge [Jorge Ortiz-Colom](#)The influence of Howe's structural typology on Galician wooden bridges [Chiara Tardini](#)Fabrication and erection of large steel bridges in the twentieth century: from structural analysis to optimization of fabrication [Eberhard Pelke](#), [Karl-Eugen Kurrer](#)**7d Building services**

chaired by Leen Lauriks

Glasgow city chambers: the construction and building services history of a major municipal building from the Victorian period [Nina C. Baker](#)Built-in, exposed or concealed comfort services. Attempts to industrialise collective housing after 1945 [Giulia Marino](#)A masterpiece in the use of light, Johnson Wax headquarters. Racine, Wisconsin, USA [Giulio Sampaoli](#)Richard Neutra and the history of the vertical louvered solar control system [Clifton Fordham](#)Sheltered. Parked. Respirated. Three underground spaces by Gottfried Schindler [Andreas Putz](#)

Coffee break

16h00

## 8. THEMATIC SESSION - 2 parallel sessions

**8a Architects and bureaucrats: centralised governments and the administrative pre-conditions of building before 1750**

chaired by Merlijn Hurx

The impact of bureaucratic procedures on architectural planning in the Late Middle Ages in the Low Countries [Merlijn Hurx](#)Building for the Crown: contracts and administration under the Spanish monarchy in the sixteenth and seventeenth centuries, the Monastery of El Escorial [Pilar Chías](#), [Tomás Abad](#)Bureaucratization and dynamization of construction processes in the electorate of Bavaria [Andreas Gommel](#)The director, the first architect of the academy and the professor: the roles of these figures in the academic teaching of eighteenth-century France [Hélène Rousteau-Chambon](#)Architects and institutions in the construction of the new city of Cervia [Iacopo Benincampi](#)**8b Early thin shells - players, impulses, and effects (2/2)**

chaired by Roland May

The diffusion of the Zeiss-Dywidag system in Italy: two cases in Rome [Martina Russo](#), [Edoardo Currà](#)A great achievement of the Soviet construction technology in Siberia: the reinforced concrete cupola of the Novosibirsk Theatre [Ivan Nevzgodin](#)Wooden shells in pre-war Soviet Union (1925-39) [Olga Arkhipkina](#)Laborious and difficult': the evolution of Pier Luigi Nervi's hangar roofs (1935-41) [Thomas Leslie](#)Contemporary light vaults in Colombia. The origin of a modern tradition [Julian Garcia](#), [Fernando Magdalena](#), [Juan M. Medina](#)

Gala Dinner

## FRIDAY July 13, 2018

9h00

## 9. OPEN SESSION - 5 parallel sessions

**9a Contractors and architects (19th century)**

chaired by Hermann Schlimme

General contractors and architects in the late nineteenth-century America [Brian Bowen](#)Emergence of heavy contracting in the United States in the nineteenth century [Sara E. Wermiel](#)The work and professional status of John (1787-1852) and Benjamin Green (1813-58), architects and engineers [Paul W. R. Bell](#)Spatial management of contractors. An analysis of the industrial sites of the Louis De Waele enterprise in Brussels (1867-1988) [Matthijs Degraeve](#), [Jelena Dobbels](#), [Inge Bertels](#), [Heidi Deneweth](#), [Stephanie Van de Voorde](#)**9b Process of building (16th-18th century)**

chair to be confirmed

A dispute on Venetian techniques of foundation: Vincenzo Scamozzi in San Nicolò da Tolentino (1591-95) [Marco Capponi](#)The foundations of the *Nieuwe Kerk* Tower in Amsterdam (1645-1652) [Gabri Van Tussenbroek](#)The Church of Peace in Jawor: a few remarks on the organization of its construction in the years 1654-56 in the light of written and iconographic sources [Ulrich Schaaf](#)*Accouplement* : vicissitudes of an architectural motif in classical France [Pedro P. Palazzo](#)**9c Trades and contracts**

chaired by Robert Carvais

Building contracts in the city of Girona from the fourteenth to the eighteenth century [Miquel Àngel Chamorro](#), [Jordi Soler](#), [Ramon Ripoll](#), [Elena Vilagran](#)Renovating early modern Leiden: new perspectives on the building trades [Heidi Deneweth](#)German stonemasons and fort architecture of the Texas frontier [Liane Hancock](#)

	<p><b>9d Forts and castles</b> chaired by <a href="#">Thomas Coomans</a></p> <p>Sasanian construction technology in the Maiden Tower Complex as evidence of Late Antiquity building activities in Baku (Azerbaijan) <a href="#">Marina Döring-Williams</a>, <a href="#">Luise Albrecht</a></p> <p>Changes in the battlements and machicolations of the Late Medieval castles between the duchy of Milan and Este dominions. Just a question of style or also function? <a href="#">Laura Balboni</a></p> <p>Geometry and proportions of the medieval castles of Latvia <a href="#">Arturs Lapins</a></p> <p>Evolutionary traces in European nail-making tools <a href="#">Chris How</a></p>
	<p><b>9e Modernity and locality</b> chair to be confirmed</p> <p>Modernity and locality in the use of brick in Spanish architecture (1870s-1930s) <a href="#">Ryohei Kumagai</a>, <a href="#">Yoshihiko Ito</a>, <a href="#">Fuuko Kimura</a></p> <p>From pickaxes to steam saws: the construction of the row house in Dublin (1730-1888) <a href="#">Susan Galavan</a></p> <p>Dutch natural stone: interpretation of a vernacular building material in modern architecture <a href="#">Wido J. Quist</a></p>
	Coffee break
	<b>KEYNOTE</b>
11h00	<b>Tullia Iori: The language of structures. The Italian School of Engineering. Tribute to Sergio Poretti</b>
	Lunch time
13h30	<b>10. OPEN SESSION - 4 parallel sessions</b>
	<p><b>10a Ancient Egypt and Classical Antiquity</b> chaired by <a href="#">Krista De Jonge</a></p> <p>New typology for Old &amp; Middle Kingdom stone tools: studies in the Hatnub quarries in Egypt <a href="#">Olivier Lavigne</a></p> <p>Late Antique vaults in the cisterns of Resafa with 'bricks set in squares' <a href="#">Catharine Hof</a></p> <p>Schematic reconstruction of a type of Roman scaffolding used for the Basilica of Maxentius <a href="#">Luise Albrecht</a>, <a href="#">Marina Döring-Williams</a></p> <p>The secret of zoomorphic impost: a new reading of the Achaemenids' roofing system <a href="#">Mahdi Motamedmanesh</a></p> <p>Early Greek stone construction and the invention of the crane <a href="#">Alessandro Pierattini</a></p>
	<p><b>10b Bridges 2: structural aspects</b> chaired by <a href="#">Andreas Kahlow</a></p> <p>A timber bridge constructed in seventeenth-century Japan: study of innovation in the construction of Kintai Bridge and its maintenance techniques <a href="#">Congcong Ren</a></p> <p>Navier's 1823 <i>Mémoire</i> : analyses and observations on displacements and stiffness of suspension bridges <a href="#">Dario A. Gasparini</a>, <a href="#">Stephen G. Buonopane</a></p> <p>John A. Roebling's Allegheny Aqueduct and Smithfield Street Bridge: nineteenth-century innovation in multi-span suspension bridges <a href="#">Stephen G. Buonopane</a>, <a href="#">Dario A. Gasparini</a></p> <p>The Boyne Viaduct: early indeterminate lattice girder analysis and design <a href="#">Dermot O'Dwyer</a>, <a href="#">Ronald Cox</a></p> <p>Origins of the modern cable-stayed bridge: the Dischinger story <a href="#">Roland May</a></p>
	<p><b>10c Contractors (20th century)</b> chaired by <a href="#">Brian Bowen</a></p> <p>A business-historical analysis of Entreprises générales Henri Ruttiens (1878-2000) <a href="#">Jelena Dobbels</a>, <a href="#">Inge Bertels</a>, <a href="#">Bernard Espion</a>, <a href="#">Ine Wouters</a></p> <p>History of the Italian contractors of large reinforced concrete structures in the twentieth century <a href="#">Carolina Di Pietro</a></p> <p>Building in (times of) war. Blaton's construction activities in occupied Belgium <a href="#">Rika Devos</a>, <a href="#">Bernard Espion</a></p> <p>William Arrol and Peter Lind: demolition, construction and workmanship on London's Waterloo Bridges (1934-46) <a href="#">Christine Wall</a></p>
	<p><b>10d Innovations in concrete: material, structures and engineering</b> chaired by <a href="#">Mario Rinke</a></p> <p>François Coignet (1814-88) and the industrial development of the first modern concretes in France <a href="#">Gilbert Richaud</a></p> <p>The Portland cement industry and reinforced concrete in Portugal (1860–1945) <a href="#">Joao Mascarenhas-Mateus</a>, <a href="#">Caio Rodrigues de Castro</a></p> <p>'Theory' and systematic testings – Emil Mörsch, Carl Bach and the culture of experimentation into reinforced concrete construction at the turn of the twentieth century <a href="#">Christoph Rauhut</a>, <a href="#">Torsten Meyer</a></p> <p>From invention to production: the introduction of prestressed concrete <a href="#">Jørgen Burchardt</a></p> <p>Reinforced concrete in Italy through the work of two generations of engineers: Mario and Giorgio Baroni <a href="#">Edoardo Currà</a>, <a href="#">Martina Russo</a></p>
	Coffee break
16h00	<b>Closing session</b> <b>Best Paper Awards</b>