



**Research**  
**at the Architectural Design &**  
**Conservation Research Unit**

**DEPARTMENT OF ARCHITECTURE**

This handbook has been produced by

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on behalf of the Department of Architecture,  
University of Strathclyde.



# ADCRU

## **Architectural Design & Conservation Research Unit (ADCRU)**

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<https://www.strath.ac.uk/research/subjects/architecture/architecturaldesignconservation/>



**Architectural Design & Conservation Research**



**Research Unit (ADCRU)**

“ Architects, engineers, planners and other built environment professionals, conservators and building patrons have a duty to understand the values and nature of existing buildings and to critically act accordingly while conserving and reusing them. ”

ADCRU deals with the challenges of properly conserving built heritage while allowing changes to adapt it to contemporary uses in an appropriate way. We also deal with the design of new buildings which contribute to the conservation of our environment, learning from traditional strategies and the latest technological innovations.

Our research aims to provide the necessary knowledge, methodologies and approaches to conceive and deliver conservation design projects and new buildings which will have a positive impact on people’s sense of identity, well-being and the environment.

**To do research at ADCRU contact:**

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# RESEARCH AT ADCRU

## About us

ADCRU promotes research-informed practice and practice-informed research. It was established in 2013 by Dr Cristina Gonzalez-Longo together with the MSc in Architectural Design for the Conservation of Built Heritage (MSc ADCoBH). She is a Chartered Architect in UK and Spain and RIBA Specialist Conservation Architect, with over twenty years' experience. After graduating at the Technical University of Madrid (ETSAM), she spent three years in Rome with a scholarship from the Italian government to study architectural conservation at the Specialisation School of the University of 'La Sapienza'. She was the project architect and resident architect of Queensberry House (part of the new Scottish Parliament Building, RIBA Stirling Prize) and designed Bowbridge Primary School in Newark (RICS Sustainability Award).

## Our research interests

Our research focuses on a variety of subjects such as theory of conservation, architectural design, architectural history, survey & investigations, construction & construction history, structural and environmental design in conservation.

## We encourage PhD applications on a variety of topics

ADCRU has an international and diverse cohort of PhD students and has attracted researchers funded by the Commonwealth Scholarship Commission in the UK, the European Commission and former students of the MSc ADCoBH. Topics we promote include:

- Complex architectural conservation projects
- Transformation of buildings & architectural conservation theory
- The architecture & conservation of 17th & 18th centuries Scottish architecture
- Environmental design, energy and historic buildings
- Application of Image Processing and new technologies needs for architectural conservation

# KEY RESEARCH AREAS



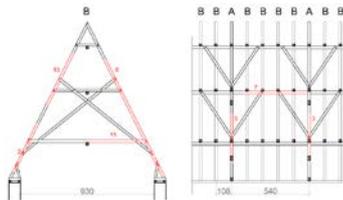
## Architectural Stratification & Complex Architectural Conservation Projects

The research unravels the complexities of buildings and relating conservation projects to improve current design and conservation methodologies.



## Environmental Design of New buildings

We promote an integrated research about old and new buildings, as we see the present as a continuum of the past and consider conservation in a wider environmental sense.



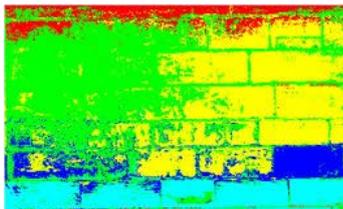
## Architectural conservation theory

ADCRU researches the development of the discipline over the centuries, both internationally and locally and proposes new developments.



## Architecture, assessment & conservation of 17<sup>th</sup> and 18<sup>th</sup> century architecture in Scotland

We investigate the design, methodologies, materials and techniques employed in order to disseminate good conservation practice.



## Digital applications needs & new methodologies for architectural conservation

ADCRU considers all the stages of the architectural conservation project, from the early investigation and assessment of historic buildings to the creation and dissemination of architectural knowledge.

# PHD TOPICS WE SUPERVISE



## **Current PhD topics**

*New Conservation and Consolidation Methods for Sandstone to Avoid Replacement*

Noemi Giovelli (co-supervised by the Department of Pure and Applied Chemistry)



*Innovative Technologies for Architectural Conservation*

Diana Avramica

*Achieving Indoor Comfort, Air Quality and Energy Efficiency in High-Rise Residential Buildings*

Mohd Firrdhaus Bin Mohd Sahabuddin



*Historic Buildings in UK (Modernist, Victorian, Georgian): a Study Qualifying the Health Benefits Inherent in their Architecture*

Sarah-Jane Stewart (co-supervised by the Department of Mechanical and Aerospace Engineering)

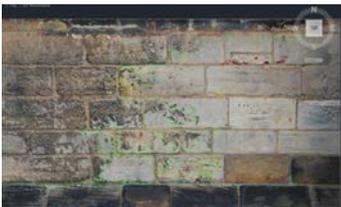


*The Application of Image Processing to the Survey, Assessment and Monitoring of Historic Buildings*

Bowen Qiu (co-supervised by Department of Electronic and Electrical Engineering)

*Conserving 17<sup>th</sup> and 18<sup>th</sup> century Stone Built Heritage in Scotland: Materials and Techniques*

Clara Gonzalez Manich



*Building Skills for Conserving Seventeenth- and Eighteenth-Century Scottish Built Heritage: the Initial Assessment of Timber Roof Structures.*

Anna Serafini

## **New techniques and methodologies for architectural conservation**

Our innovative research is based on internationally recognised architectural conservation theory and involves a range of new and existing methodologies as well as collaboration across disciplines, with the scope to involve and influence professionals, policy makers and the wider society.



# INTERNATIONAL EVENTS & FORUMS

Dr Cristina Gonzalez-Longo is a member of the International Council on Monuments and Sites (ICOMOS) International Training Committee (CIF) and actively participates in the improvement of architectural conservation standards and practice. ADCRU has conceived and is invited to participate in a range of events such as:

- Workshop with the University of Edinburgh and University of Leuven, Edinburgh, 2018
- “Rising from the Ashes: the Conservation of Mackintosh’s Glasgow School of Art”. Public conference and open table organised and chaired by ADCRU at The British School at Rome, 2016.
- “Incontri Internazionali di Restauro e Riqualificazione”, Officina L’Aquila, Italy, 2016.



## Rising from the Ashes: the Conservation of Mackintosh's Glasgow School of Art

ADCRU organised this public conference and open table at The British School at Rome. It included presentations by the Mackintosh Restoration Project team and leading architects from the Italian Government, and an open table discussion with Professor Giovanni Carbonara and the *Scuola di Specializzazione in Beni Architettonici e del Paesaggio at Sapienza Università di Roma*. The event also included a series of site visits organised by ADCRU in Rome with the architects responsible of the projects, from the Italian Government.



# KNOWLEDGE EXCHANGE

## Teaching

ADCRU teaches theory and practice of conservation of built heritage at postgraduate level. It runs the MSc in Architectural Design for the Conservation of Built Heritage, a course fully accredited by the Institute of Historic Building Conservation (IHBC) and conforming to the internationally recognised Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites adopted by ICOMOS.

## Knowledge Exchange Events

ADCRU organises and delivers courses and lectures open to professionals and academics. It has created, organised, chaired, collaborated and participated in many local and international events, such as:

- Masterclass “Preservation in Historic Areas of Spain: Panorama of a Shifting Paradigm” delivered by Santiago Rodriguez-Gimeno and workshop with the University of Edinburgh and University of Leuven, Edinburgh (2018)
- Presentation of research on the Monteath Mausoleum for the Friends of Glasgow Necropolis, Glasgow (2018).
- “Design Well on the Old: Architectural Conservation as a Solution for the Environmental, Social and Economic Challenges of the 21st Century”, VIP guest speaker, Scotland Build 2017, Glasgow (2017).
- “Rising from the Ashes: the Conservation of Mackintosh’s Glasgow School of Art”. Public conference and open table at The British School at Rome (2016).
- “Kelvingrove Unlocked: Exploring Kelvingrove’s Architectural Design and Conservation”, part of Explorathon, European Researchers Night (2016).

A photograph of a stone staircase with a modern metal handrail, set against a textured stone wall. The staircase is made of dark stone steps and a light-colored metal handrail. The wall is made of rough-hewn stone blocks. The lighting is warm and natural, suggesting an indoor or sheltered outdoor setting.

## **New Opportunities for the Management of Scotland's Historic Environment**

ADCRU and The Heritage Place led by Dr Deborah Mays (also Honorary Lecturer at ADCRU) combined their expertise and knowledge to organise this day conference. It was a pilot and fact-finding exercise designed to equip attendees with an appreciation of the wide range of benefits available from the Historic Environment Strategy for Scotland ('Our Place in Time'). It highlighted the holistic value of architectural conservation and place-making. The target audience was 'front line' practitioners, particularly within local authorities, including councillors. The comprehensive range of speakers set out how the Strategy can be realized and how its application can bring wider returns. Delegates were given the opportunity to discuss specific case studies and share skills and thinking and the feedback was excellent.

# RESEARCH GRANTS & PROJECTS



HISTORIC  
ENVIRONMENT  
SCOTLAND

ÀRAINNEACHD  
EACHDRAIDHEIL  
ALBA

## The Application of Image Processing to the Survey, Assessment and Monitoring of Historic Buildings.

Bridging The Gap (BTG), University of Strathclyde

## Historic Environmental Scotland: Building skills for conserving 17th-18th centuries Scottish built heritage: timber roofs and masonry.

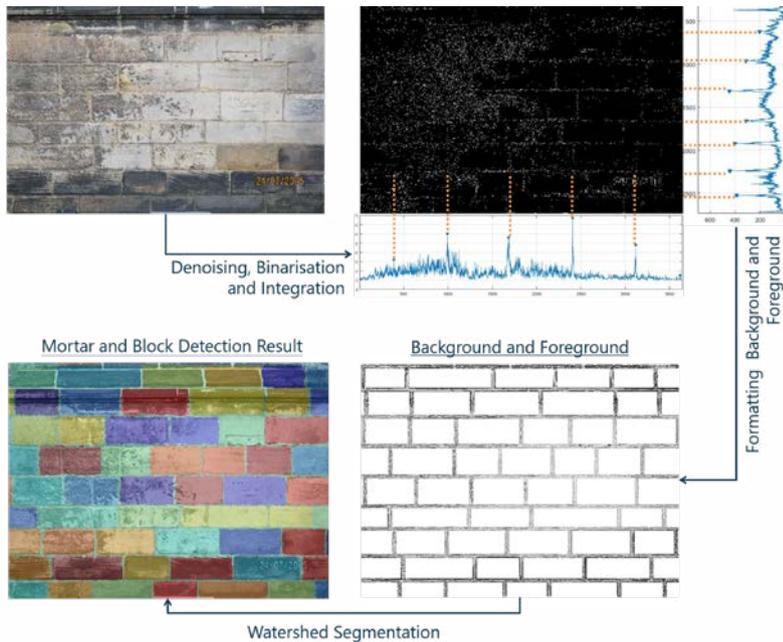
Historic Environment Scotland



COMMONWEALTH  
SCHOLARSHIPS

## Architectural Conservation Theory, Architectural Stratification and Complex Architectural Conservation projects; Low Energy Design and Healthy Buildings.

Commonwealth Scholarship Commission in the UK





## **Materials & Techniques for conserving 17<sup>th</sup> and 18<sup>th</sup> Century Scottish Built Heritage.**

This research project is focused on the stone masonry used to build residential architecture in 17<sup>th</sup> and 18<sup>th</sup> century Scotland. The objective of the research is to identify and classify masonry types, defining their characteristics and relating them to their specific historical context, which are essential to understand and assess the conservation of this unique heritage.

ADCRU leader, Cristina Gonzalez-Longo was the project and resident architect of Queensberry House (featured).

# PUBLICATIONS BY RESEARCH AREA

## **Architectural Stratification & Complex Architectural Conservation Projects**

Gonzalez-Longo, C. (2020) *The Temple of Venus and Rome and Santa Francesca Romana at the Roman Forum: Preservation and Transformation*. Academic Monographs Routledge Research in Architecture, Routledge, Taylor & Francis Group. (In preparation, contract signed).

González-Longo, C (2017). "Design Well on the Old: Architectural Conservation as a Solution for the Environmental, Social and Economic Challenges of the 21st Century". *The Times Scotland*.

González-Longo, C (2013). "Da S. Maria Nova a S. Francesca Romana: Architettura e committenza Olivetana nella trasformazione della chiesa dal Trecento al Seicento", in A. Bartolomei Romagnoli (ed.) *"La canonizzazione di S. Francesca Romana. Santità, Cultura e Istituzioni a Roma tra Medioevo ed Età Moderna*. SISMELE- Edizioni Del Galluzzo.

González-Longo, C. and Theodossopoulos, D (2013). "The stratification of S. Maria Nova at the Roman Forum: construction, materials and conservation", in *Construction & Building Materials*, ELSEVIER.

González-Longo, C. and Theodossopoulos, D (2009). "The Platform of the Temple of Venus and Rome", in Kurrer et al. (eds) *Proceedings of the 3rd International Conference on Construction History*, Cottbus. Berlin.

## **Environmental Design of New buildings**

Mohd Sahabuddin, M. F. B., Gonzalez-Longo, C. & Howieson, S. (2019). "Achieving health and comfort in high-rise residential buildings by using dynamic-hybrid air permeable ceiling (DHAPC)", in *American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE)*.

Mohd Sahabuddin, M. F. B. & Gonzalez-Longo, C. (2019). "Balancing comfort and indoor air quality in high-rise buildings for social housing in Kuala Lumpur: from regulations to construction", in *Proceedings of the 51th AiCARR International Conference*, Venice.

Mohd Sahabuddin, M. F. & Gonzalez-Longo, C. (2018). "Assessing the indoor comfort and carbon dioxide concentration in high-rise residential buildings in Kuala Lumpur: the people's housing programme." Invited paper for the *CIBSE Technical Symposium: Stretching the Envelope*.

Mohd Sahabuddin, M. F. B. & Gonzalez-Longo, C. (2017). "Natural ventilation potential in Kuala Lumpur: assumptions, realities and future". PLEA 2017: 33rd International Conference on Passive and Low Energy Architecture.

Mohd Sahabuddin, M. F. B., González-Longo, C. (2015). Traditional Values and Their Adaptation in Social Housing Design–Towards a New Typology and Establishment of 'Airhouse' Standard in Malaysia'. International Journal of Architectural Research: ArchNet-IJAR 9 (2).

Mohd Sahabuddin, M. F. B., Gonzalez-Longo, C. (2014). 'Traditional Values and Their Adaptation in Social Housing Design. World Academy of Science, Engineering and Technology, International Science Index, Architectural and Environmental Engineering, 1(4), 226.

## **Architectural conservation theory**

González-Longo, C. (2015). "Can Architectural Conservation be Mainstream?" ICOMOS Scientific Symposium, Florence.

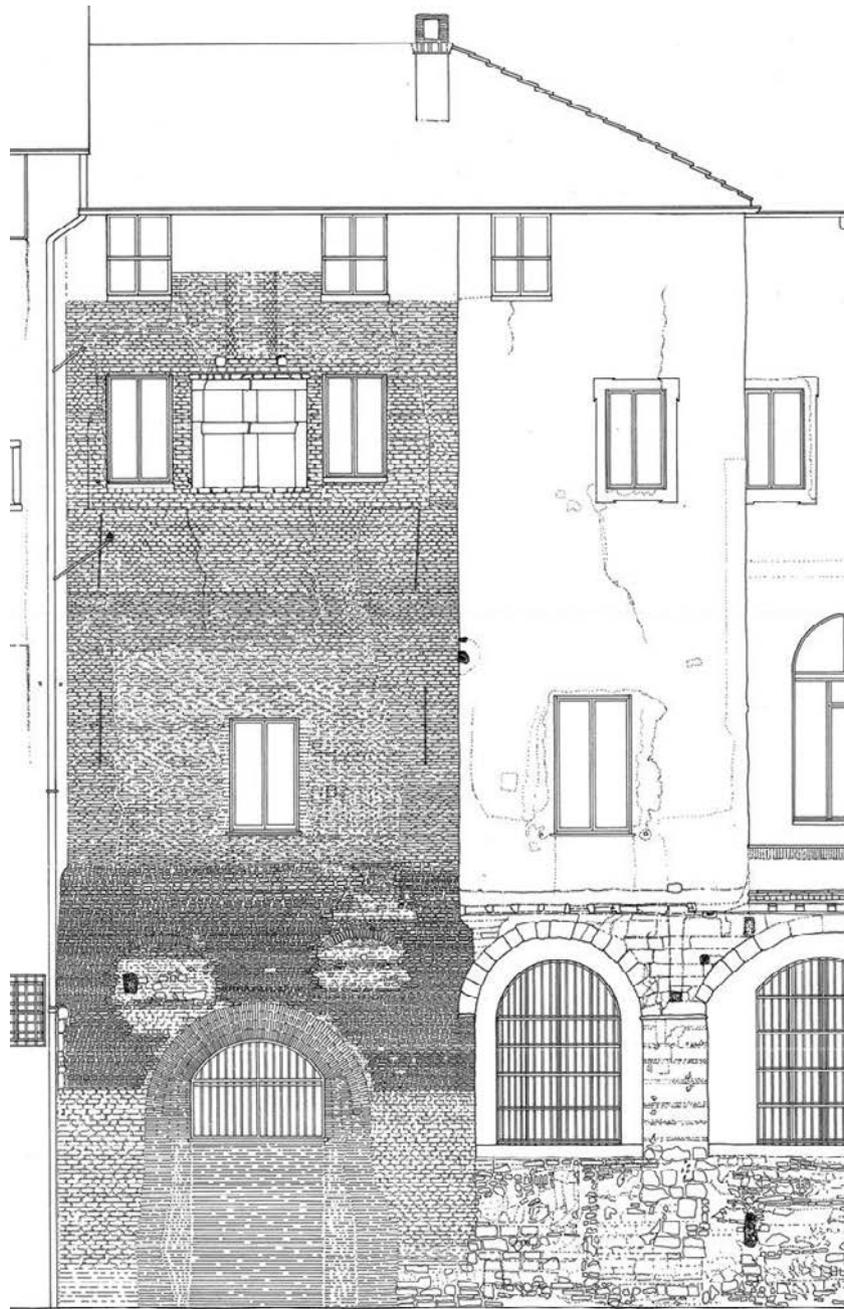
González-Longo, C. (2012). "Using old stuff and thinking in a new way: material culture, conservation and fashion in architecture", in P. Emmons, J. Lomholt, J. Hendrix (eds) *The Cultural Role of Architecture: Contemporary and Historical Perspectives*. Routledge.

González-Longo, C. (2010). "Urban Renaissance, Urban Baroque- Urban Design in Scotland since the new Scottish Parliament in Edinburgh". *Urban Design journal*, Urban Design Group, Issue 214.

## **Architecture, assessment & conservation of 17<sup>th</sup> and 18<sup>th</sup> century architecture in Scotland**

Gonzalez-Longo, C. (2019). "Robert Mylne and the first baroque mural monument in Greyfriars Kirkyard, 1675", in Jupp, P. & Grainger, H. (eds.) "Death in Scotland: Chapters from the Twelfth to the Twenty-First Century", Peter Lang International Academic Publishers, Oxford.

Gonzalez-Longo, C. (2019). "The architectural innovations of Mr James Smith of Whitehill (c.1645-1731) within the European context", in Lowrey, J., Humm, L. & Mackechnie, A. (eds.). "The Architecture of Scotland 1660-1750". Edinburgh University Press.



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Gonzalez Manich, C., Gonzalez-Longo, C. and Monari, F. (2017). "La fábrica de piedra durante los siglos XVII y XVIII en Escocia: estudio preliminar", in X Congreso Nacional y II Congreso Internacional Hispanoamericano de Historia de la Construcción.

Serafini, A., Riggio, M. and Gonzalez-Longo, C. (2016). "A Database for the Assessment and Analysis of Historic Timber Roof Structures". International Wood Products Journal.

Serafini A. and González-Longo, C. (2016). "17C and 18C timber roof structures in Scotland: design, pathologies and conservation", SAHC 2016, Leuven.

Serafini, A. and González-Longo, C. (2015). "The Design and Construction Techniques of eighteenth-century Timber Roofs in Scotland: Glasgow Trades Hall and Tweeddale House in Edinburgh", 5<sup>th</sup> International Congress on Construction History, Chicago.

González-Longo, C. (2014). "The Transformation of Drumlanrig Castle at the End of seventeenth-century", in J. Campbell et al. (eds) Proceeding of the First Conference of the Construction History Society, Queen's College, Cambridge. Exeter, Short Run Press.

González-Longo, C. (2012). "James Smith & Rome", in Architectural Heritage journal. Edinburgh University Press.

González-Longo, C. and Theodossopoulos, D. (2012). "From Master Mason to Architect: James Smith's Construction Techniques at the End of 17th Century in Scotland", in R. Carvais, A. Guillerme, V. Negre and J. Sakarovitch (eds.) "Nuts & Bolts of Construction History. Culture, Technology and Society", Proceeding of the 4th International Conference on Construction History. Picard, Paris.

## **Digital applications needs & new methodologies for architectural conservation**

González Manich, C., Kelman, T., Coutts, F, Qiu, B, Murray, P., González-Longo, C. and Marshall, S. (2016). "Exploring the use of image processing to survey and quantitatively assess historic buildings", SAHC 2016, Leuven

González-Longo, C. (2013). "Beyond Built Heritage Documentation: digital applications needs for research and conservation" in DEDICATE (Design's Digital Curation for Architecture), AHRC project Final Seminar, University of Glasgow.



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