

Annual Review 2017/18

The Bartlett
Institute for Sustainable Heritage



Director's introduction

Professor May Cassar

Welcome to the UCL Institute for Sustainable Heritage Annual Review 2017/18, which showcases another wonderfully varied and successful year at the Institute.

I hope you enjoy reading our review of the Institute's unique programmes, external engagement activities, and the latest innovative research of UCL ISH academics, researchers and students.

There were numerous significant highlights this year meriting special emphasis.

The Institute has formally agreed an Academic-Heritage Partnership with Historic England, the government's policy adviser on the historic environment. Uniquely modelled on clinical partnerships between universities and the National Health Service, the focus of our partnership has been the creation of the Chair in Heritage Evidence, Foresight and Policy. Professor Richard Sandford who led Futures teams in government alongside his academic work, was appointed to this post in February 2018.

The publication of the Heritage Science Special Issue of *Angewandte Chemie* was a fantastic achievement for the Institute and SEAHA CDT this year. Deputy Director Professor Matija Strlic negotiated and co-edited the peer-reviewed issue for which he also wrote an editorial about heritage science. The issue included two publications by UCL ISH students and researchers, and three more by SEAHA, demonstrating the strength of academic research within the Institute and CDT.

Another notable success was the development of the new Data Science for Cultural Heritage MSc- the first of its kind. To be launched in September 2019, it will bring together expertise from diverse fields to deliver data scientists with the necessary training to address the multidisciplinary data challenges facing the heritage industry.

It has been another outstanding year for public engagement at the Institute. The Mobile Heritage Lab (MHL) team deserve a special mention for their ongoing commitment to public engagement activities. The MHL made numerous visits to schools, museums and festivals, experimenting with public engagement projects to help tackle inequality of access to scientific culture.

It has also been an exceptional year for research at the Institute, with many staff and student papers published, conference abstracts and posters. A particular highlight was the extensive media coverage of Dr Katherine Curran's research paper 'Classifying Degraded Modern Polymeric Museum Artefacts by Their Smell', published in the prestigious journal *Angewandte Chemie*.

We look forward to another successful and eventful year, which we will share with you through our social media channels and Open Heritage Guest Lectures, to which everyone is welcome. Please do visit www.ucl.ac.uk/bartlett/heritage for up to date information.

I would like to finish by thanking all our students, staff and local and international partners, as they are all an essential part of the Institute's success.



About UCL ISH

The UCL Institute for Sustainable Heritage delivers sustainable solutions to real-world cultural heritage problems through ground-breaking cross-disciplinary research and innovative teaching for future heritage leaders.

Cultural heritage is a field that has quickly gained recognition and value in the worlds of management, hard science and industry. It attracts – and demands – a rich mix of people, backgrounds and disciplines to answer complex, searching questions.

The Institute has collaborated on research with many of the world's leading organisations in the field, including the V&A, the Tate, the British Library, the National Archives, the Smithsonian Institution and UNESCO, as well as numerous national, regional and smaller local organisations.

UCL ISH is part of The Bartlett School of Environment, Energy and Resources (BSEER), along with the UCL Institute for Sustainable Resources, the UCL Energy Institute and the UCL Institute for Environmental Design and Engineering.

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Cover image credit: Mark Kearney

Highlights from 2017/18



SEPTEMBER

UCL ISH makes impact at the International Council of Museums Committee for Conservation Triennial Conference in Copenhagen

OCTOBER

UCL ISH laboratory spaces open at Here East

NOVEMBER

Prof. May Cassar and Dr Kalliopi Fouseki invited by UNESCO Chair in Urban Conservation to attend a UNESCO network meeting on the theme of urban heritage and sustainable development

JANUARY

Former Sustainable Heritage MSc student Sally Sabbahy becomes consultant for the Egyptian Ministry of Antiquities

FEBRUARY

UCL ISH welcomes Richard Sandford as Professor of Heritage Evidence, Foresight and Policy to the Institute



Credit: Michael Chapman

MARCH

Dr Katherine Curran helps to establish European network on plastics heritage

Dr Simoni Da Ros wins poster prize at Applications of Thermal Analysis and Calorimetry Conference

APRIL

Dr Kalliopi Fouseki awarded research grant for 'Sustainable Energy Futures in Historic Cities: The case of Old Cairo' project



Credit: Maija Powell

MAY

UCL ISH research on sniffing out museum decaying artefacts receives widespread media coverage

Dr Kalliopi Fouseki nominated for UCL teaching awards

UCL ISH Alumnus Xander Lacson presents dissertation research to Heritage Conservation Society of the Philippines



Credit: Josep Grau-Bove

JUNE

Prestigious chemistry journal *Angewandte Chemie* publishes special issue on heritage science, featuring numerous contributions from UCL ISH staff and students

UCL ISH launches 'Transformational Heritage' photo competition

JULY

Dr Katherine Curran gives talk on ERC Starting Grant project COMPLEX at Getty Conservation Institute in Los Angeles

AUGUST

UCL ISH announces new MSc Data Science for Cultural Heritage programme, to begin in 2019/20

UCL ISH Heritage Science Laboratory achieves bronze sustainable laboratory award from Green UCL

SEAHA CDT gains its own collection within the *Heritage Science* journal following multiple successful publications

New partnership

“This ambitious pilot is a unique opportunity to test a new, strategic form of partnership between a heritage agency and a world class university. From joint priorities through shared capacity-building and research collaboration, we fully expect that this Academic Heritage Partnership will create a new standard for the way in which cultural public sector research establishments and higher education institutions cooperate to create lasting public value”.

This statement from Barney Sloane, Director of Research at Historic England, was made six months into a five-year research and teaching partnership between the UCL Institute for Sustainable Heritage and Historic England. This partnership is the heritage equivalent of the “teaching hospital” affiliation that formalises the relationship between medical schools (the academic institution) and hospitals (the public sector organisation): in this ‘academic-heritage partnership’ (AHP), UCL is the academic institution and Historic England the public sector organisation responsible for heritage. It was proposed in order to strengthen the links between heritage public policy and practice and their underpinning academic base, and has been designed to enhance heritage education and training, research and service. The AHP will serve as a heritage training platform for students of the historic environment and the heritage disciplines, as well as a platform for significant research and practice involving both academic and practice communities.

The AHP will deliver public value and benefit through helping to address challenges regarding the:

1. Separation of Higher Education and heritage public policy/practice.
2. Level of preparedness of students and heritage professionals to meet local, national and international heritage needs.
3. Need for continuing education and exposure to heritage innovation for heritage professionals in both academic and practice environments.

The successful delivery of the Academic Heritage Partnership will create a research and training environment which combines academic excellence with practical application, takes a strategic view of future needs of the historic environment, and develops teaching frameworks to deliver appropriately skilled and educated practitioners for the future, and utilises research grants to extend and enhance the capacity and capability of heritage professionals and academics together. In doing this, the AHP can address directly the challenges identified above.

Historic England has made the explicit case in its Corporate Plan and Research Strategy for developing better partnerships with Higher Education Institutions particularly in the area of collaborative research. UCL and HE have worked closely together over several decades, collaboration on the AHRC/EPSRC Science and Heritage Programme and, more recently, as a core partner on the EPSRC Centre for Doctoral Training in Science and Engineering in the Arts, Heritage and Archaeology (SEAHA), and notably also with the UCL Institute of Archaeology.

However, current drivers of wider change demand creative responses from universities and the public sector. This kind of collaboration, building on existing partnerships, will support just such a response: a deeper, strategic relationship bringing academic excellence together with real-world policies, issues and challenges for the historic environment.

Characteristic activities

The kinds of characteristic activities we envisage include:

- Formal written partnership agreements between participating institutions
- Shared personnel, often in the form of faculty or staff who are jointly appointed and funded
- Organisational structures that allow the sharing of resources between partnering institutions including funding, staff and equipment as well as expertise and skills
- Exchange of resources or other forms of compensation between partnering institutions as services are provided
- Collaborative efforts to provide education and training for students and heritage professionals grounded in historic environment theory and practice
- Joint proposal and implementation of research projects
- Shared support for and participation in providing historic environment services

With a focus on Future Heritage and with the appointment of Richard Sandford to the Chair of Heritage Evidence, Foresight and Policy at UCL ISH, the overarching aim of the partnership is to show what is possible when a world-class university and a public body work in a genuine partnership to research, evaluate and respond to key issues facing the historic environment over the coming decades, and to build emerging insights from this work into new ways of teaching and research.



New Master's programme



Credit: Unsplash

UCL ISH develops new Data Science for Cultural Heritage MSc Programme

In the last decade, the application of all forms of digital technologies to heritage science and management, as well as digitally-born heritage, have advanced rapidly. This has led to increasing volumes of heritage data.

At UCL ISH, we have responded to this new reality by developing a new MSc programme on Data Science for Cultural Heritage (DSCH).

The DSCH MSc is an innovative and cross-disciplinary programme developed to train data scientists to understand, manage and exploit data through its numerous and diverse applications in the heritage context.

It is the first programme of its kind, responding to a clear need that we have identified through our own research and our collaborations and conversations with heritage and industry partners - a need for data scientists in the heritage sector and industry more generally.

Dr Alejandra Albuerne, Dr Josep Grau-Bove and Prof. Matija Strlic (who developed the proposal for the Data Science for Cultural Heritage MSc) engaged in conversations with the heritage industry, as well as data science experts, in order to consider the content and design, the learning

objectives and teaching methods. The proposal was approved by UCL in July 2018 and the new MSc will launch in September 2019.

The initiative was received by the heritage industry with enthusiasm, and an Advisory Board comprised of representatives from the British Library, English Heritage, the Turing Institute, the Library of Congress and Historic Environment Scotland has been set up to offer support.

The programme will bring together expertise from diverse fields of science and technology, as well as arts, humanities and social sciences.

We aim to develop critical thinking by presenting students with the opportunity to reflect on the concept of cultural heritage and the motives and needs for its preservation, as well as the many roles that data can have in this process.

The contents of the programme are structured around the heritage data pipeline:

acquisition > analysis > visualization
> storage > access > repurposing & restoration > curation > conservation

As well as core data science concepts, the new MSc will offer students the possibility to develop applied data science skills in the remit of heritage, such as novel Heritage Building Information Modelling (HBIM), Heritage Imaging or Crowd Sourced and Citizen Data.

UCL ISH has developed each module to offer students high-quality and unique data science training that will broaden their thinking and prepare them to work in multidisciplinary fields such as heritage.



London,
Bloomsbury & HereEast



Full time - one year
Part time - two years
Flexible - two to five years



Programme Director
Dr Alejandra Albuerne

Find out more

To find out more please visit our programmes pages on the UCL ISH website:
ucl.ac.uk/bartlett/heritage/programmes



Credit: Robyn Parker

2018 marks the halfway point for the Science and Engineering in Arts, Heritage and Archaeology (SEAHA) Centre for Doctoral Training, and so far we've welcomed 43 students to UCL, University of Oxford and University of Brighton to study the SEAHA MRes and undertake doctorates in heritage science.

At the start of the 2017/18 year, six new students joined our MRes course, with projects ranging from the imaging of lichen on Stonehenge, to the degradation of plastics within museum collections, as part of Dr Katherine Curran's ERC grant. Five more students also joined the centre who are already undertaking their PhD/MPhil within UCL ISH and the University of Oxford. Their research focuses on topics such as moss growth on historic buildings, heating solutions in historic churches, and the deterioration of sandstone temples in China.

As well as our new arrivals, our current students have had a busy year. The student-led Built Heritage Group held their inaugural public lecture this year with Sjur Mehlum, Senior Advisor for the Norwegian Directorate for Cultural Heritage, who presented the restoration programme of Stave Churches in Norway. The Imaging Group has also held a number of meetings, hosting hyperspectral imaging demos from our industrial partners Analytik and Quantum Design UK.

In May, four of our students became research engagers at UCL museums, and have been in the museums talking to visitors, sharing their knowledge and making connections between their own research and the collections at UCL.

A special highlight of the year was our annual conference, brilliantly organised by SEAHA students. In June, over 100 heritage science professionals gathered in London to hear nine esteemed keynote speakers, podium presentations and view over 50 research posters. The delegates were also offered rare behind-the-scenes tours of the ISH Lab and of the Conservation and Scientific Research Labs at the British Museum. Given that our first cohort were close to graduation we rounded off the conference with a roundtable in collaboration with ICOM-CC on emerging heritage science professionals.

With 15 new MRes and two new PhD students starting this October we are looking forward to an equally busy and fruitful 2018/19.

It has been a prolific research year for SEAHA students, with multiple publications in high-profile journals and considerable media attention.

Scott Orr's research into wind-driven rain and its effect on built heritage, published in *Science of the Total Environment* and *Journal of Wind Engineering and Industrial Aerodynamics*, was picked up by the *Sunday Times*.

Hayley Simon published a paper on using synchrotron techniques to study iron cannonballs in *Angewandte Chemie* (part of special edition on heritage science) and also appeared on BBC Oxford for World Science Day.

Danae Pocobelli and Natalie Brown both published papers in journal *Heritage Science* on BIM for heritage and Chinese paper characterisation respectively. The journal now hosts a SEAHA CDT collection, currently featuring seven articles by SEAHA students and their supervisors, industrial and heritage partners.

Cerys Jones' research on imaging Egyptian cartonnages captured the attention of the public by being featured on the BBC Evening News, as well as multiple newspapers, and she went viral by hosting an 'ask me anything' on her research on social news site Reddit.



Credit: Keats Webb

ERC Starting Grant update



Credit: Abigail Moore



Credit: Abigail Moore

COMPLEX: 'The Degradation of Complex Modern Polymeric Objects in Heritage Collections: A System Dynamics Approach'

In April 2017 Dr Katherine Curran launched a five-year project entitled COMPLEX: 'The Degradation of Complex Modern Polymeric Objects in Heritage Collections: A System Dynamics Approach', funded by a prestigious ERC Starting Grant.

COMPLEX's vision is to consider plastic objects in their environment as complex systems and thus to provide a new way of understanding polymer degradation, while providing practical advice to heritage professionals caring for plastic artefacts.

The development of plastics during the 19th and the 20th centuries has changed people's lives in a remarkable way. Plastics are now everywhere and are now considered as part of history and part of our material heritage.

In museums, contemporary plastic artefacts degrade faster than many more traditional materials and some modern art pieces have already fallen apart. COMPLEX aims to understand the complicated mechanisms that take part in degradation and provide more evidence-based ways of preserving plastic artefacts so they

can still be displayed and stored for future generations.

The project has a team of five, including Dr Curran, two postdoctoral researchers: Dr Simoni Da Ros and Dr Argyro Gili and two PhD students: Ida Ahmad and Isabella del Gaudio.

The project is developing a new approach to understanding material degradation using system dynamics. The work involves both experimental studies and mathematical modelling of material degradation processes. The COMPLEX project is in collaboration with Tate, the Museum of London, Lacerta Technology and Process Systems Enterprise.

COMPLEX uses an interdisciplinary approach, in which conservators work together with scientists to develop innovative methods to maintain objects' integrity and significance in collections.

To date, the COMPLEX team have set up a long-term natural degradation experiment with real plastic objects.

Isabella is studying the impact of degradation on the moisture uptake

properties of cellulose acetate.

Simoni is developing analytical methods to assess changes in material properties after degradation, including a comparison between Dynamic Mechanical Analysis (DMA) and Differential Scanning Calorimetry (DSC) as techniques to measure the glass transition temperature of plastics and the use of FTIR microscopy to study how material properties vary through the profile of an object after degradation.

Argyro's current research focuses on the mathematical modelling of polymer degradation, including the modelling of multiple mechanisms such as migration of plasticiser and physical damage.

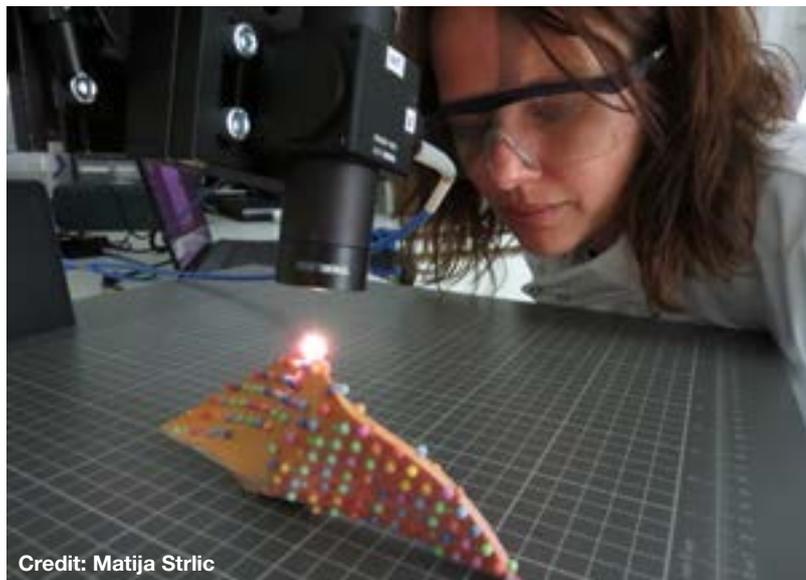
Ida's research focuses on developing computer simulations to understand degradation mechanisms in cellulose acetate.

Contact us:

ucl.ac.uk/bartlett/heritage/research/projects/current-projects/complex

Twitter: @complexplastic

Research overview



Credit: Matija Strlic

In a fast-changing world, the preservation and protection of our cultural heritage matters more than ever before.

UCL ISH's research engages with complex, real-world heritage issues that demand world-class research expertise from numerous disciplines. The Institute's research frequently influences policy-making and has been described by the Smithsonian Institution as 'world-leading'.

Most of our research spans subjects in arts and humanities and hard sciences. This means expertise is drawn from across many disciplines, not just within the Institute, but also from the UCL Heritage Science and Engineering Network, a community of experts in departments across UCL with an interest in cultural heritage work.

Our research informs our teaching, benefits the partners that we work with and aims to push forward knowledge and understanding within heritage and scientific communities, as well as among the wider public.

Public engagement is an important part of our work. We disseminate our research through newspaper articles, television, poetry, stand-up comedy, public lectures and participation in public events at institutions such as the British Museum and the British Library.

Research themes

UCL ISH research falls within the following themes:

1. Heritage Risk and Resilience
2. Heritage Science
3. Modern and Contemporary Heritage
4. Future Heritage

Research facilities

The Heritage Science Laboratory

The state-of-the-art Heritage Science Laboratory at 29 Gordon Street, which opened in 2010, offers 100m² of lab space for studying historic objects and environments. The lab houses an archive of reference historic sample materials, an invaluable source of study materials for collaborative, doctoral and Master's projects.

The Mobile Heritage Science Laboratory

The Mobile Heritage Laboratory (MHL), launched in 2015, is a unique research vehicle that enables scientific research as well as engagement with the public and professionals in museums, heritage and archaeological sites across the UK.

The equipment covers different areas of heritage science, such as environmental monitoring, imaging and chemical analysis and is available to any institution or organisation that wishes to propose a project.

The extensive range of instruments available allows the contents of the lab to be reconfigured on-demand. It includes a ground penetrating radar, hyperspectral cameras, a weather station and pollution monitors, among other equipment.

ISH at UCL HereEast

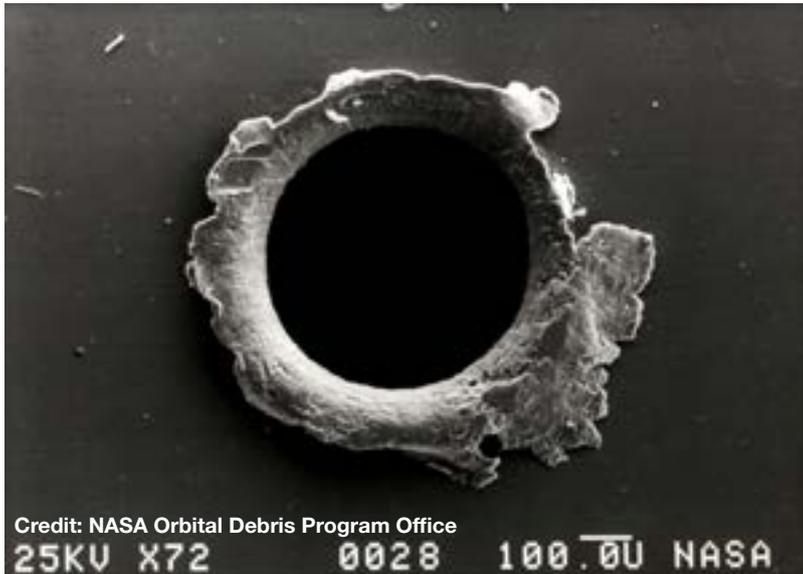
The imaging and materials testing facilities in the new collaborative space of UCL Here East are the most recent addition to the ISH labs. The new hyperspectral imaging equipment pushes the boundaries of current imaging technology, and include the first equipment for 3D hyperspectral imaging.



Credit: UCL ISH



Research: Future Heritage



The Future Heritage research strand is new to UCL ISH, complementing existing research themes of heritage science, modern and contemporary heritage and heritage risk and resilience.

It is concerned with heritage that does not yet exist, and which may require radically new approaches to the way heritage is theorised, curated, and protected, in order to ensure its sustainability.

This research strand will highlight the ways heritage can contribute to societies' successful adaptation to a warmer, more complex and uncertain world.

How can heritage inform our understanding of what it means to be alive in transitional times? What resources can it offer that support people to accept and live through change? How might heritage contribute to, critique, and enrich the development of positive future imaginaries? In a transforming world, what continuity can heritage provide, and how can it help us accept change?

Through addressing questions like these, the research will support present and future researchers, policy-makers, practitioners, and publics to identify, share, and care for heritage still to emerge that will contribute to the sustainability and wellbeing of future society.

By helping the field of heritage to anticipate and work with unavoidable change, while ensuring the continuity of heritage values, it will be a venue for thinking about what is important to society over the long-term.

Interdisciplinary research

The nature of the questions with which this strand is engaged means that Future Heritage research needs to draw on a wide range of other academic fields and disciplines.

Areas such as the sociology of time and the future, philosophy of science, science and technology studies, systems theory, design, and futures and anticipation studies will all be relevant alongside heritage studies, whether through providing a theoretical basis for understanding the objects of research, or offering methodological approaches and techniques on which to build.

From these fields, the strand will develop new methodologies, employing, for example, aspects of systems analysis and data projections alongside ethnographic approaches, discourse analysis and speculative design.

Reinforcing this methodological innovation will be the development of the metatheoretical perspectives necessary to support working across disciplines.

In engaging with these various fields, the Future Heritage strand will aim to demonstrate how thinking with heritage and the long-term can be contribute to their development in turn.



People

Theme leads:

Professor Richard Sandford (r.sandford@ucl.ac.uk)

Professor May Cassar (m.cassar@ucl.ac.uk)

Research: Future Heritage



Credit: Miguel Discart

Why future heritage?

Heritage has a unique relationship to the future. It encompasses all of society's deliberate efforts to intervene in the society to come, to pass on an inheritance to future generations. This inheritance—whether material or immaterial, buildings or music, things the size of a gene or the size of an atmosphere—reflects the values of our time.

Heritage is what we care about, and what we think future society should have the chance to care about, too. In this way, it is the source of continuity between the society of the past, present and future, underpinning our identity and guiding our aspirations.

The heritage we create now, the ideas and materials that we pass on, will also be what future society draws on in responding to change and uncertainty. Current scientific evidence and consensus suggests that radical change can be expected. Over the next hundred years, the resources upon which life in the global North currently depends will be greatly reduced. Information technologies emerging today will have engineered new forms of sociality and identity.

New geopolitical structures will have replaced those established during the late twentieth century. Through the arts and culture, societies will reimagine their relationships with a changing planet. The forces shaping future heritage over the coming century will look very different to those active in the last century.

Future Heritage research

These changes raise many challenges for heritage. The Future Heritage research strand contributes to addressing these challenges through three broad areas of work:

1. Future contexts for present and emerging heritage

In what sort of new circumstances will future heritage be situated? Using models and data from heritage science and engineering alongside other natural and social sciences, and drawing on the experience of strategic foresight and futures practitioners, the research will explore how best to make robust and generative claims about the possible futures in which heritage will exist.

2. Future forms of heritage

As new materials and technologies emerge, as new patterns of consumption and production develop, and as new senses of what is valued gain currency within society, the nature of heritage will evolve. The research will identify speculative and prefigurative work across the arts and sciences exploring what (for example) synthetic biology or artificial intelligence offer artists and designers, and engage with the new forms of practice and artefact that will result. It will track—and foster—innovations in cities, in building materials, in digital preservation, in artistic expression, to imagine new possibilities for heritage beyond current framings.

3. Future roles for heritage in society

What different roles might heritage play in future society? What can society expect of heritage? How can the capability of heritage to support responses to challenges of resilience and sustainability be developed? In addressing this question, research within the Future Heritage strand will pay attention to the need for heritage policy and leadership to develop a critical and informed view of the future, working with the multiple forms of evidence needed to anticipate change, and understanding how these forms of evidence can best contribute to decision-making.

Practical contribution

The Future Heritage research strand aims to connect academic research to practical applications. Our work, through research, teaching and knowledge exchange, will equip heritage practitioners and leadership teams with the skills and critical perspective they need to ensure that heritage contributes to the challenges of transitioning to a sustainable society, working with national policy groups, institutions and property developers to ensure that research is grounded in practical contexts. A partner in this work is Historic England, the national body for the historic environment, whose interest in understanding questions around future heritage is demonstrated by the partnership with UCL ISH (see AHP feature).

Research: Heritage risk & resilience



Credit: Diana Rahman

This research theme positions heritage at the heart of global socio-economic and environmental challenges. Global realities threatening people and places include war, population displacement, climate change, social injustice and poverty.

Heritage has traditionally been viewed by heritage managers as ‘an object at risk’ of loss. As a result, heritage management has focused on developing strategies for protecting heritage from present and future risks and threats. It is only recently that heritage has been regarded as an active, enabling process for sustainable development. This active approach to heritage is what makes heritage and its management resilient towards global challenges.

A critical and sustainable approach to heritage management should not only look at how heritage can be protected, but also how heritage can function as an enabling factor of sustainable and resilient development.

For heritage to enable resilient and sustainable development it is imperative that novel, cross-disciplinary, socio-technical methods are developed by interdisciplinary research teams and in partnership with stakeholders from the heritage and policy sector to look at the dynamic change of heritage over time.

Through collaborations with prestigious heritage partners such as Historic England, National Trust and a range of academic expertise in the disciplines of psychology, system dynamics and economics, UCL ISH is taking the lead in shaping and advancing new ways, methods and approaches in understanding and managing heritage.

People

Theme lead: Dr Kalliopi Fouseki (k.fouseki@ucl.ac.uk)

Research foci

1. Heritage as a driver for peace

Focusing on the ways in which heritage is being used in conflict reduction.

2. Heritage participation as a driver for community/social development

Aiming to measure the social impact of participatory heritage projects on communities and the institutions involved.

3. Sustainable heritage tourism through community participation

Investigating participatory models of community-led heritage tourism initiatives mainly in heritage landscapes located in rural and semi-rural areas, as well as open-air museums.

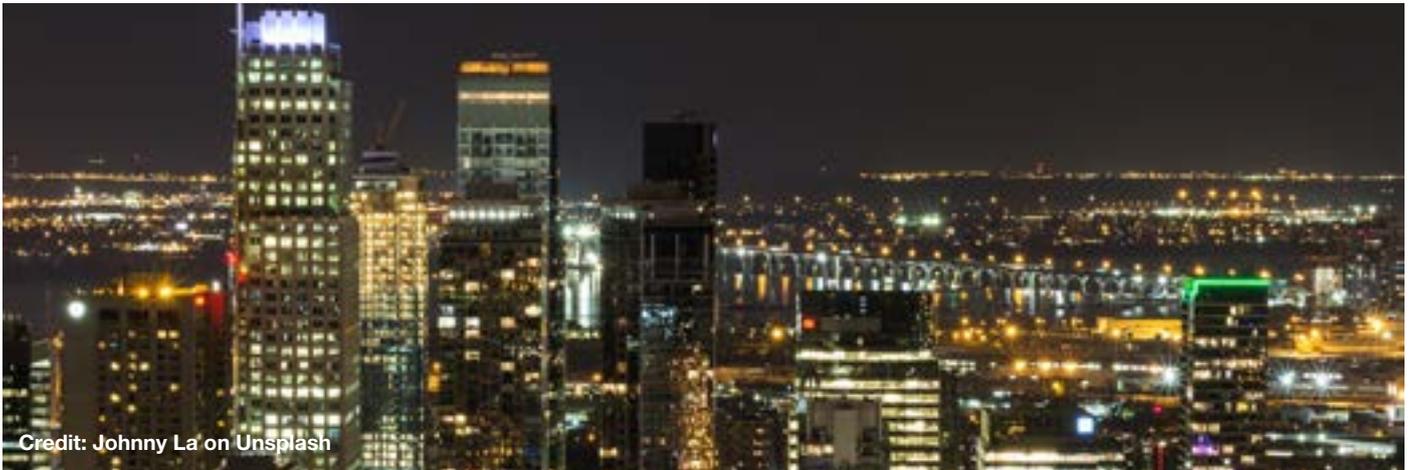
4. Sustainable futures for historic cities/historic urban environments

Examining the multiple heritage dimensions of historic cities and their change over time, unpacking values attributed by communities and heritage professionals.



Credit: Diana Rahman

Research: Heritage risk & resilience



Credit: Johnny La on Unsplash

International Historic Urban Landscape Forum

In 2017/18, UCL ISH co-organised (with the School of Architecture) an international forum on the implementation of the UNESCO 2011 Historic Urban Landscape Recommendation, under the patronage of UNESCO.

The forum was generously funded by a Bartlett Research Synergy Grant and aimed to bring together policy-makers, heritage professionals and researchers from a diverse array of backgrounds, in order to explore the challenges in implementing the Historic Urban Landscape Recommendation on the ground.

The recommendation introduces a spatial approach to urban heritage areas that moves beyond the idea of a historic centre or ensemble, recognising the intangible dimensions of the city. It also makes direct reference to the need for historic urban landscapes to be sustained, as well as to drive sustainable development, an issue that becomes more topical than ever as a result of the recently adopted by the United Nations Sustainable Development Goals in 2016.

The discussions and papers presented at the forum formed the basis for a special journal issue on this subject published by the *Historic Environment: Policy and Practice* (forthcoming in autumn 2018). It also inspired and fed the edited volume *Heritage and Sustainable Urban Transformations: Deep Cities* co-edited by Dr Kalliopi Fouseki and two colleagues from the Norwegian Institute for Cultural Heritage Research, Dr Torgrim Guttormsen and Dr Grete Swensen.

The forum opened new areas of research currently leading to research proposals, which look at the identification of the critical factors contributing to social, environmental, cultural and economic sustainability in declined urban areas over time. On this basis, a system dynamic analysis of a longitudinal study of the Townscape Heritage Initiative (a Heritage Lottery Fund programme supporting heritage-led urban regeneration) was carried out, in order to formulate a starting hypothesis related to the critical factors leading to the sustainable and resilient development of the city.

This work inspired four MSc Sustainable Heritage students (Theodora Koukou, David Newton, Sohini Nandi and Yixin Jin) and one PhD student (Sofia Murillo) to explore more closely the dynamic interconnections between social cohesion, community participation, energy efficiency, heritage values and economic sustainability. This work, which is still on-going, has already resulted in three peer-reviewed papers that will be presented at the forthcoming International conference of Energy Efficiency in Historic Buildings, held in Visby, Sweden.

People

Organisers: Dr Falli Palaiologou and Dr Kalliopi Fouseki

Collaborators: Prof. May Cassar, Prof. Laura Vaughan, Dr Kayvan Karimi

External collaborators: Prof. Francesco Bandarin, UNESCO Assistant Director-General for Culture and Prof. Mike Turner, UNESCO Chair in Urban Design and Conservation Studies

Research: Heritage science

Heritage science and policy



Credit: James Dobson and the National Trust

Heritage science is a cross-disciplinary research area encompassing the science of understanding of the past and of management of heritage.

The studies involve topics as diverse as analysis of composition or manufacture, of environmental interactions with heritage, research into decision making in heritage management, or studies of interaction between visitors and objects, buildings or sites.

Since the discipline responds to research questions typically generated by curators and custodians, including communities and the public, it has a deeply social purpose. It defies conventional disciplinary boundaries, which is a significant opportunity for this relatively young field of academic enquiry. Intense cross-disciplinarity has been at the heart of heritage science research at our Institute, and in our projects we typically combine STEM and SSH expertise. We like to be challenged by stakeholders from industry, and we collaborate with a wide range of enterprises and heritage institutions alike.

Heritage science requires theoretical, field and laboratory research. Our Heritage Science Laboratory is a state-of-the-art infrastructure, equipped with environmental and material science research facilities, many of which are transportable and can be deployed on field trips as part of the SEAHA Mobile Heritage Laboratory. This enables us to do field research. With support by the Bartlett, we have developed a new facility in HereEast (Stratford), where we intend to intensify our research into imaging, data and digital heritage. As part of this facility, the Heritage Imaging Suite is a cutting edge visible and near infrared imaging setup suitable for imaging small objects as well as buildings, enabling researchers to visualise the structure and composition of surfaces. This line of research requires excellent understanding of big data, data mining and modelling, from climate and pollution to modelling of large collections.

People

Theme lead: Prof. Matija Strlic (m.strlic@ucl.ac.uk)

UCL ISH is at the forefront of working with external policy stakeholders including the National Heritage Science Forum (NHSF) and the ICON Heritage Science Group through Professor May Cassar and Professor Matija Strlic respectively.

UCL was the first institutional member of the NHSF which brings together the producers and users of heritage science to improve collaboration, help practitioners make better use of research, and demonstrate the public benefit of heritage science.

Professor Cassar leads the NHSF Policy Working Group ensuring that policy statements and consultation responses are regularly issued as a means of affecting change and ensuring the industry speaks with a coherent voice.

In 2017/18, UCL ISH supported the NHSF with responses to the following: the DCMS's tailored review of the National Heritage Memorial Fund (NHMF) and the Heritage Lottery Fund (HLF); the Government's industrial strategy Green Paper, 'Building our Industrial Strategy'; summarised the key points that had a bearing on heritage science from the manifestos of the four main UK political parties and the UK Digital Strategy 2017, highlighting opportunities for enhancing engagement, the use of data and digital technology in heritage research and industry, and the role of heritage organisations in skills development for a digital economy.

The Science and Technology Select Committee (Commons) hosted a Brexit summit in February 2018. NHSF submitted evidence to the Committee's Science and Innovation Inquiry. A response to the March 2018 HLF consultation on funding priorities for its next Strategic Framework, 2019-2024 was also submitted.

Within UCL, ISH has led the development of a Heritage Science and Engineering Network with the support of the Deans of Engineering Sciences, Mathematical and Physical Sciences and The Bartlett. Professor Cassar is the co-chair of the Network while Professor Strlic represents the Bartlett on the Steering Group.

Research: Heritage science



Credit: Yun Liu

Angewandte Chemie Special Issue & Editorial on heritage science

In 2018, the prestigious applied chemistry journal *Angewandte Chemie* published a Special Issue on heritage science, featuring numerous contributions from both ISH staff and SEAHA students.

UCL ISH and SEAHA Deputy Director Prof. Matija Strlic opens the issue with an editorial exploring the remit and the future of this cross-disciplinary field, showing its deep roots not only in chemistry but also in other physical and engineering sciences. Exploring the key facets of the discipline, the editorial outlines the outward-facing nature of heritage science, its impact beyond the domains of engineering and science, and the deeply social purpose of the field in its contribution to human understanding of identity and place.

Furthermore, two broader challenges are outlined that emerge from the journal's articles: (i) understanding heritage ecologies – the natural, cultural and social environment of heritage, and (ii) development of networked heritage ecosystems with the relevant monitoring and modelling support.

As a powerhouse of heritage science, SEAHA is well represented in the issue. Student Hayley Simon authored a paper on her work with heritage partner the Mary Rose Trust, 'A Synchrotron-Based Study of the Mary Rose Iron Cannonballs', and Laura Arcidiacono, also a student of the centre, was co-author on the paper 'Egyptian Grave Goods of Kha and Merit studied by Neutron and Gamma Techniques'.

UCL Institute for Sustainable Heritage alumna Rosie Brigham also published her work 'Crowdsourcing as an Analytical Method: Metrology of Smartphone Measurements in Heritage Science' alongside co-author SEAHA supervisor Dr Josep Grau-Bove.

Lastly, ISH lecturer Dr Katherine Curran was first author on the paper 'Classifying Degraded Modern Polymeric Museum Artefacts by Their Smell', which explores emissions from objects.

"Heritage science is the study of interpretation and management of the material evidence of the humankind. It enables both society and individuals to exercise their right to cultural heritage and contributes to our understanding of who we are and our sense of place. Heritage science demonstrates its relevance to, as well as its deep roots in chemistry, and in other physical and engineering sciences ..."

Read more in the Guest Editorial by UCL ISH Deputy Director, Matija Strlic, available at the link below.



Read

To read UCL ISH and SEAHA contributions to the *Angewandte Chemie* issue & editorial special issue please follow this link:

[https://onlinelibrary.wiley.com/doi/toc/10.1002/\(ISSN\)1521-3773.HeritageScience](https://onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1521-3773.HeritageScience)

Research: Modern and Contemporary

COMPLEX project update



Modern materials—such as plastics—are very much in the media these days, owing to the significant problems associated with plastic waste in the environment. But people often don't realise that plastics are valued and collected by many museums and heritage organisations.

Whether as pieces of modern art and design, artefacts in 20th century social history collections, archival materials such as film reel and photographs or 3D printed objects, more and more plastics are finding their way into museum collections. However, these can be very challenging materials that present tricky conservation problems – owing to how widely varied plastics can be and also to inherent material instability.

At UCL ISH, we are combining chemical analysis, material degradation studies and mathematical modelling to address the difficulties posed by plastics in heritage collections. However, our research also has a broader reach as we explore modelling approaches to plastic degradation pathways that are relevant to the breakdown of plastic waste in the environment and also study the way in which we value plastics, as museum artefacts but also in daily life.

Research as part of this theme falls into three broad categories, although there is strong overlap between all of them:

1. Analysis of plastic objects in museums
2. Material degradation studies
3. Mathematical modelling of degradation processes in plastics.

In 2016, Dr Katherine received a prestigious ERC Starting Grant to fund a five year project: 'COMPLEX: The Degradation of Complex Modern Polymeric Objects in Heritage Collections: A System Dynamics Approach'.

In order to test the mathematical models developed as part of the COMPLEX project, the team will collect data from naturally aged samples in real museum conditions.

In an experiment that will last for at least three years, pieces of reference historic plastics and freshly prepared laboratory samples will be monitored to get quantitative data about how plastics degrade in real museum conditions.

Samples have been set up in both open and closed environments, at both the Museum of London and Tate and in cold storage.

Material properties, such as molecular weight and plasticiser content, will be measured every six months to understand how these realistic conditions affect material degradation.

The data from this experiment will become a very valuable resource for the COMPLEX project and for the wider field, providing evidence that is complementary to that provided by accelerated ageing experiments.



People

Theme lead: Dr Katherine Curran (k.curran@ucl.ac.uk)

Postdoctoral researchers: Argyro Gili and Simoni da Ros

Research: Modern and Contemporary



Credit: UCL ISH

‘Classifying Degraded Modern Polymeric Museum Artefacts by Their Smell’

In their publication in *Angewandte Chemie*, UCL ISH researchers investigate the emissions of volatile organic compounds (VOCs) from plastic-based art objects and provide a first calibration scheme for using VOC analysis to study the degradation of plastics in a museum environment.

Everyone is familiar with the detection of VOCs. They can be sensed by the nose and tongue and indicate different aspects of the current state of the emitting system—be it mown grass in the garden, the level of maturation of cheese, decay in fish, or even if a patient suffers from diabetes. However, the emittance of marker chemicals is not restricted to living systems. Volatile degradation products can also be detected for plastics.

Since the beginning of the 20th century, many plastics-based objects have found their way into museums, and conservators and heritage scientists are highly interested in assessing their preservation status,

ideally without taking physical samples from the objects.

Working in collaboration with several museums, libraries, and archives, Dr Katherine Curran and colleagues from UCL ISH and the University of Strathclyde, Glasgow have introduced a non-invasive solid phase micro-extraction gas/chromatography/mass-spectrometry (SPME-GC/MS) method for marker VOCs emitted by several plastics contained in modern museum artefacts. They have also developed a rough calibration system to classify three real objects from Tate into two distinct decay states.

Every plastic leaves its own signature of degradation products. For example, degrading cellulose acetate emits acetic acid (vinegar), which can be quantified over time. To assess the quality and quantity of VOCs from polymers, the scientists chose chemical markers for plastics common in museum artefacts such as cellulose-based polymers, polyurethane foam, poly(vinyl chloride), polystyrene,

and polyethylene. As reference degradation states, they used plastic samples exposed to heat for zero to 10 weeks. The aim was to find characteristic VOC patterns: “The VOCs detected provide an insight into the composition and ongoing chemical degradation processes of the objects studied,” the authors remarked.

Based on the detected VOCs, a rough classification scheme as “early stage” and “advanced degradation state” could be established for the different plastics—and tested for real museum objects based on these materials.

For two objects from Tate made in the 1920s and 1930s, the scientists reported a low degradation state, but one made in 1923–1924 was found in a more advanced decay. While this might be a matter of concern for the conservators, Curran and her colleagues plan to expand their analysis and argue that a calibration scheme based on naturally aged samples would help reduce the current limitations.

“VOC analysis is a really powerful tool for disease diagnosis – it gives lots of interesting chemical information in a non-invasive way. This makes it really useful in a heritage context also. Here we explore VOC analysis as a non-invasive tool to understand the chemistry of degradation in plastic museum artefacts.”

Dr Katherine Curran



Learning at UCL ISH



Credit: Mark Kearney

Everybody has a stake in cultural heritage. UCL ISH trains future conservators of that heritage, and carries out research leading to innovative, sustainable solutions.

Sustainable heritage is a field that has quickly gained recognition and value in the worlds of management, hard science and industry. It is one that attracts—and demands—a rich mix of people, backgrounds and disciplines to answer complex and searching questions.

Our student body includes many from the fields of science, engineering, architecture, curation, conservation, interior design, marketing and property development, who come to our programmes with very different perspectives on heritage issues and a willingness to have their views informed and formed.

Teaching is led by highly accomplished academic staff, with support from practising professionals, giving strong grounding in real-world issues.

UCL ISH offer three Master's programmes and two PhD strands with specialisms in different aspects of heritage.

Designed for a new generation of heritage leaders, the unique and topical Sustainable Heritage MSc introduces students to the latest conservation policies, projects, methodologies and practices in the context of historic buildings, sites, landscapes and collections.

The new Data Science for Cultural Heritage MSc is a cross-disciplinary programme developed to train data scientists to understand, manage and exploit data. This programme will launch in September 2019.

The MRes Science and Engineering in Arts, Heritage and Archaeology (SEAHA) is a pioneering Master's programme that delivers an outstanding cross-disciplinary heritage science education.

Scholarships and funding

Visit the UCL ISH website to find out about our scholarships:
ucl.ac.uk/bartlett/heritage/programmes/scholarships-and-funding

Career prospects

The UCL ISH student survey results showed that nine out of 10 graduates from the last five years have secured a job, or are pursuing a PhD or other further study.

87% of students who answered the survey agreed that the programmes had a positive impact on their careers.

Current UCL ISH alumni job roles include:

National Project Manager at English Heritage

Education Assistant in a Sculpture Garden

Educational Coordinator at Education Ministry

Curator at Government Art Collection

Projects Building Surveyor, National Trust

First Secretary, Embassy of Japan in Egypt

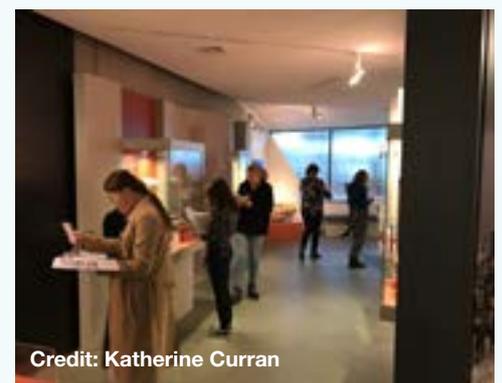
Freelance Preventive Conservator

PhD in Cultural Heritage

Director Architect

PhD in Heritage Science

Head of Conservation, National Archives of the Netherlands



Credit: Katherine Curran



Sustainable Heritage MSc

MSc trip to Malta



Credit: Mark Kearney

This unique and topical programme aims to create the heritage leaders of the future.

The Sustainable Heritage MSc introduces students to the latest conservation and heritage management policies, projects, methodologies and practices in the context of historic buildings, sites, landscapes, museums and collections.

Students critically approach heritage as a complex system from a cross-cultural and multidisciplinary perspective within the context of environmental, social and economic global challenges.

The programme, which is accredited by the Royal Institution of Chartered Surveyors (RICS), gives students an internationally recognised qualification from a world-leading university, enhancing the skills and expertise needed to contribute to heritage projects at a high level.

The MSc uses a unique block teaching model during which each module is taught in two intensive weeks. This allows full-time students to reflect on each Module separately avoiding clashing deadlines and part-time/flexible students to pursue the MSc alongside their full-time career. The flexible, modular nature of the programme is intended to support busy professionals interested in furthering their education who can take up to five years to complete the course.

“The interdisciplinary nature of the course and the diverse professional backgrounds of my fellow classmates created an environment where I was able to flourish”

*Sally Sabbahy,
Sustainable Heritage MSc student (2016/17).*

A highlight of the Sustainable Heritage MSc is the two-week study visit to Malta, hosted by Heritage Malta.

In December 2017, the MSc Sustainable Heritage students travelled to the World Heritage Site of Ggantija Temples in Gozo, Malta.

Ggantija Temples are over 5000 years old, older than the pyramids, and a very important archaeological site. Ggantija has recently been developed as part of a European Regional Development Fund project, which involved the building of a new modern Interpretation Centre and the development of the landscape around the temples into a heritage park.

The Sustainable Heritage MSc students spent two weeks on the site, studying the impact of the ERDF project on Ggantija.

At the end of the two weeks they presented their findings to the Board and staff of Heritage Malta and in April 2018 delivered a report to Heritage Malta with follow-up recommendations for the site.



Credit: Katherine Curran



London,
Bloomsbury



Programme Director
Dr Kalliopi Fouseki



Full time - one year
Part time - two years
Flexible - two to five years

Sustainable Heritage MSc

Sohini Nandi tells us about her experience as a UCL ISH MSc student

What was your academic background before joining the Sustainable Heritage MSc?

I studied Architecture at Biju Patnaik University of Technology in India and subsequently postgraduate Architectural Conservation at the School of Planning and Architecture in India.

What inspired you to pursue a career in Sustainable Heritage?

A project in my previous postgraduate programme was aimed at developing a sustainable heritage development plan for a World Heritage Site by incorporating local values. This made me realise that heritage doesn't just belong to the experts, it also belongs to a wide spectrum of stakeholders. I wanted the opportunity to study the principles of sustainable heritage and learn how to implement them.

What made you choose the Sustainable Heritage MSc at UCL ISH?

The programme promised something different and more than my previous studies. The holistic curriculum meant that I would be able to study heritage science along with the ideas of socio-cultural sustainability. A multi-disciplinary faculty was a major attraction point for me.

“Heritage doesn't just belong to the experts”

What have you enjoyed most about the programme?

I enjoyed working with a multi-disciplinary and international class under the guidance of a multi-disciplinary faculty and professional experts. The Heritage Malta work experience was also very interesting as we were responsible for delivering a project report that would be reviewed and implemented by the Authority.

What is your dissertation topic?

My dissertation topic is ‘Sustainable methods for thermal upgrading of post-war prefab timber Swedish houses in the UK’. I am looking into the impact of present thermal insulation methods on the heritage values of these unlisted historic houses. Through discussions with house residents and monitoring environmental data, I will try to understand the associated heritage values and how well the buildings are behaving as a buffer. By understanding the drivers and prohibitors of interventions, I aim to offer a method that both increases thermal efficiency and upholds the cultural significance.

“The programme promised something different than my previous studies”

What skills have you gained from the programme?

As well as furthering my existing skills of heritage building conservation, the programme has also taught me about the conservation of museum collections, methods of heritage impact assessment and environmental impact assessment.

Has the programme opened up career possibilities for you?

The programme has opened up many other career possibilities related to impact assessment studies, in the museum sector and energy efficiency intervention works to historic buildings.

Would you recommend the MSc to other students?

I would definitely recommend this programme to fresh graduates, as well as experienced heritage professionals. The study of sustainable heritage is

the only way to take heritage forward for future generations by caring for environmental, economic, social and cultural aspects.

“A multi-disciplinary faculty was a major attraction point for me”

What advice would you give to prospective students who are interested in pursuing a career in Sustainable Heritage?

I would advise prospective students to come with an eagerness to learn and work with a multi-disciplinary team. It is a lifetime opportunity to learn about diverse heritage related topics and get involved in projects led by professional experts.

What are your plans once you have graduated?

I will be continuing a training placement with Historic England (London) and will actively look for a job in the UK and Finland.



Sohini Nandi,
UCL ISH MSc student

SEAHA MRes



Credit: Robyn Parker

The Master's in Science and Engineering in Arts, Heritage & Archaeology (SEAHA) is a pioneering programme that delivers an outstanding cross-disciplinary heritage science education through a one-year research project.

The programme introduces a unique assembly of scientific disciplines—physical sciences, engineering, imaging, computing, social sciences—brought together in order to address research questions relating to cultural heritage. The MRes can be taken either on its own or in the frame of the Centre for Doctoral Training (CDT). The CDT is an eight-year initiative (2014-2022) to establish an infrastructure to meet challenges set by the heritage sector, industry and government.

The programme delivers tailored teaching through research. Students are taught by accomplished academics and have access to outstanding scientific resources, including the Heritage Science Laboratory and the Mobile Heritage Lab, our unique mobile facility for field research and public engagement.

Students develop transferable skills of leadership and management with the guidance of informed heritage and business professionals, in a teaching environment designed to promote debate, individual thinking and mutual understanding.

The taught and transferrable skills elements consist of two compulsory taught modules (30/180 credits each). Two research modules (30/180 credits each) and the master's dissertation (60/180 credits) comprise the research element of the course.

After completing the programme, students are ideally suited to continue with a PhD or a challenging cross-disciplinary research career in industry or heritage institutions.



London,
Bloomsbury



Full time - one year
Part time - two years
Flexible - two to five years



Programme Director
Dr Josep Grau-Bove



Credit: UCL ISH

Scholarships

The Science and Engineering in Arts, Heritage and Archaeology MRes can be taken as a standalone degree or as part of the SEAHA CDT, for which we offer 12 studentships a year. Visit the UCL ISH website to find out more about our scholarships:

ucl.ac.uk/bartlett/heritage/programmes/scholarships-and-funding

SEAHA MRes

Hannah Duggan tells us about her experience as a UCL ISH MRes student

What was your academic background before joining the SEAHA MRes?

I received a bachelor's degree in Chemical Engineering and Art History from Tufts University.

What inspired you to pursue a career in heritage science?

I have always been passionate about art history and chemistry. Heritage science provided a perfect opportunity to marry these two interests. Not only did it utilize skills from both disciplines, it allowed for the interpretation of art through a different lens.

What made you choose the SEAHA MRes at UCL ISH?

I chose to study at UCL ISH because the programme offered an excellent opportunity to combine my passions in a research-based environment. I was very eager to get involved in research and the SEAHA programme focused on developing a thesis. A masters programme in heritage science is also quite unique and there aren't many comparable options in the states.

“I loved the diversity of the academic backgrounds of the students”

What have you enjoyed most about the programme?

I loved the diversity of the academic backgrounds of the students. Everyone has expertise in complementary fields, which made for very interesting discussions and group projects.

What is your dissertation topic?

Glues derived from animal products have been used in the preparation and conservation of painting canvas

for hundreds of years. However, it is not clear how exactly these adhesives contribute to the mechanical strength of a canvas and how this contribution changes with time. My comparative study looks at the effect of age, thickness, and type of animal glue on the mechanical reinforcement the glues provide to canvas. The mechanical strength of the canvas and glue system have been measured with a tensile test.

“I was able to hone my research and problem solving skills through hands-on experience”

What skills have you gained from the programme?

I was able to hone my research and problem solving skills through hands-on experience. Analytical and project management skills were developed throughout the course and played an integral role in conducting my thesis research and writing my thesis report.

Has the programme opened up career possibilities for you?

The SEAHA programme definitely opened up career possibilities for me. I came to SEAHA very focused on painting conservation science and was exposed to many other applications for heritage science research, the variety of research my colleagues worked on and the various projects allowed me the opportunity to experience different streams of study in the field. This led me to explore other passions in the heritage industry.

Would you recommend the MRes SEAHA to other students?

I would recommend the SEAHA MRes to other students. It was a wonderful

opportunity to work with high calibre staff and course colleagues and taught me many practical technical skills, as well as experience working in situ at historic sites.

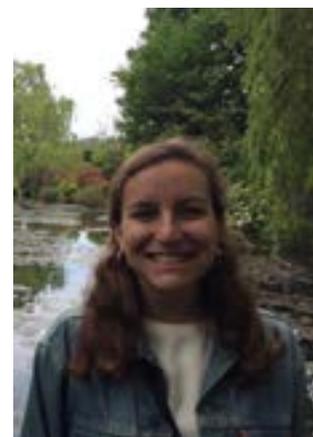
“Very rewarding opportunities often come from unexpected places”

What advice would you give to prospective students who are interested in pursuing a career in heritage science?

I would advise prospective students interested in a career in heritage science to be persistent and explore every option. Very rewarding opportunities often come from unexpected places.

What have you been up to since you graduated?

Since graduating, I have been working as a conservator at Building Conservation Associates, Inc. (BCA) in New York. BCA is a consulting firm that specializes in both the technical and historical aspects of restoring buildings and works of art.



Hannah Duggan
UCL ISH MRes student

Dimitra Kizlari



Thesis title

Foreign Cultural Policy through the work of the Cultural Institutes

Supervisors

Dr Kalliopi Fouseki, Prof. May Cassar

Overview of research:

I work at the cross-section of cultural and foreign policy. In my research I am looking at how the National Institutes for Culture (this is the official term to describe organisations like the British Council, the Goethe Institut etc.) are connected to their governments. Analysing the framework of cooperation with the state will allow scholars to understand how instrumentalism operates in foreign cultural policy, and legislators to inform their practices by taking into consideration institutional developments beyond their borders.

The project adopts a comparative angle and juxtaposes six case studies from Europe (UK – British Council, Germany – Goethe Institut, France – Institut français, Sweden – Swedish Institute, Spain – Instituto Cervantes and Greece – Hellenic Foundation for Culture) with the aim to come to an understanding of the European *res gestae* in cultural diplomacy. By monitoring how national policies are developing in the aforementioned cases and how EU institutions are unfolding their own strategies, the research hopes to unpack the complex mechanics of cultural diplomacy governance and reveal the cross-overs between national and European policies.

Successes

Soon after I published my first research article, we were contacted to present our findings at a European knowledge-sharing workshop, which gathered senior policymakers in the field of cultural diplomacy. That opportunity eventually offered me a way in and I got more business cards than I could dream of to hold interviews.

Challenges

I am a qualitative researcher doing interviews with high-ranked policymakers. It has been really difficult for me to grasp the attention of these people and arrange interviews with them. On paper, I am considered a self-funded student, which means I have no contractual partners with whom I can contact to start building a network. As a researcher working with

human subjects you therefore need to be prepared for a great number of rejections, be resourceful, and come up with an alternative approach.

Biography

Before joining UCL ISH, I worked at the UNESCO Chair on Human Rights, Democracy and Peace in Greece, coordinating the European Master's programme on Human Rights. I have also worked for the Imperial War Museums (Churchill War Rooms and HMS Belfast) as an Exhibitions Assistant and did my fair share of excavations as a trainee archaeologist.

I have a BA in Archaeology and Art History from the Aristotle University of Thessaloniki, Greece. I completed my Master's degree on Museum Studies at the School of Architecture at the same institution. In 2015, I received two scholarships to undertake doctoral research at University College London.

Funding bodies

Alexander S. Onassis Public Benefit Foundation
A.G. Leventis Foundation

Publications

Kizlari D., Fouseki, K. (2018). 'The Mechanics of Cultural Diplomacy: A Comparative Case Study Analysis from the European Context.' *The Journal of Arts Management, Law, and Society*, 48 (2), pp.133-147.

Kizlari, D. and Fouseki, K. (2018). 'Treating Resistance as Data in Qualitative Interviews'. *The Qualitative Report*, 23 (8), pp.1951-1961.

Find out more

UCL ISH MPhil and PhD students work with people and partners that are engaged with real-world heritage projects and issues. They collaborate with a wide range of academic disciplines and conduct research that has the potential to command an audience and influence far beyond UCL, London and the UK.

To find out what our other PhD students are up to please visit our PhD pages:
<https://www.ucl.ac.uk/bartlett/heritage/people/mphilphd-students>



External engagement

Public engagement events



Credit: Mark Jackson

Public engagement is an important part of the Institute's work and the range of activities in which UCL ISH academic staff, researchers and students engage extends far beyond traditional teaching and research.

Over the years the Institute has disseminated its research through newspaper articles, television, poetry, stand-up comedy, public lectures and participation in public events.

This year, the Institute hosted several speakers as part of the UCL ISH Open Heritage Guest Lecture series. The series has been running for more than 10 years and plays a significant role in the Institute's growing engagement. Once a month, the Institute welcomes speakers to discuss the subject of sustainable heritage in relation to their own profession for an audience of heritage professionals, policy makers, industry professionals, the UCL community and members of the public.

Other public engagement activities the Institute were involved in this year include school visits, museum events, science festivals, conferences, tours of the UCL ISH laboratories, and the annual UCL ISH Photo Competition.

2017/18 Guest Lecture speakers:

Dr Celia Caulcott, Vice-Provost (Enterprise and London) at UCL

Katy Lithgow, Head Conservator, National Trust

Henry Owen-John, Head of International Advice at Historic England

David Pennell, Estates Director at Burghley

Julian Richards, Professor of Archaeology at the University of York

Dr Eleanor Schofield, Head of Conservation and Collections Care at the Mary Rose Trust

Dawson Stelfox, Director of Consarc Conservation Architects

September 2017

British Science Festival event

The SEAHA Mobile Heritage Lab (MHL) visited Brighton in September, as part of the British Science Festival. Members of the public had the chance to go inside and try out a selection of scientific instruments used in Heritage Science.

October 2017

Society of Londoners event

The COMPLEX team were invited to the museum of London to present on the ongoing collaborative research between UCL ISH and the museum.

February 2018

International Day of Women and Girls in Science school visit

A group of female staff and students from UCL ISH visited Cardinal Pole School in East London to speak to year nine and ten students about their career paths.

May 2018

SEAHA Student Engagers

Four SEAHA students joined the team of 'Student Engagers' at UCL Museums. Student Engagers are postgraduate research students at UCL who aim to broaden public engagement with research by sharing their knowledge and making connections between their own research and the collections at UCL.

August 2018

Plastic: Trash or Treasure? event

UCL ISH collaborated with charity Thames 21 to run an event at the Museum of London to raise awareness of plastic waste problems, and to see if museums can be part of the solution.

External engagement



Credit: Matija Strlic

Improving the equality of access to scientific culture through the Mobile Heritage Lab

Public engagement can achieve real change in society but it needs to be thoughtful and evidence-based.

Some of the traditional modes of science engagement achieve very little: science festivals, for example, are attended by an educated public that already enjoy good levels of cultural access. At the Institute for Sustainable Heritage, we experiment with public engagement projects that can help tackle the inequality of access to scientific culture.

Just like scientific research, public engagement needs to respond to a well-defined need. The Culture and Sport Evidence Programme found that cultural participation is explained by many factors. Income is one of them, but not the most important. The culturally active are old and educated or have educated parents. Proximity to cultural facilities also matters. A privileged 30% of the UK has a museum at 20 miles of their residence. Most of the country has to travel 50 miles.

The Mobile Heritage Lab has been used by our students to experiment with new ways of bridging these access gaps, away from the ivory tower. In collaboration with the Wilberforce Primary School in Queens Park, London, our students created an innovative activity to involve schoolchildren in science. The pupils participated in a series of scientific experiments that required thinking about the scientific method, while trying to unmask a forger.

In another event, UCL ISH students worked with high-school students to monitor pollution within the National Museum in Cardiff. Another socially-minded event, named "Plastic: Trash or Treasure" explored the duality of the value of plastic. It was led by Katherine Curran and developed with the charity Thames21 and the Museum of London.

At UCL ISH, research and outreach are often combined. This academic year, the Institute worked with the Nuffield Foundation to create a placement for a sixth form student who has spent a month working on a real scientific project.

Public participation has also been an integral part of several research projects. Two students, Natalie Brown and Rosie Brigham have conducted "citizen-science" experiments, in collaboration with many members of the public, who have contributed to data collection.



Credit: Mark Jackson

Apply

The MHL is available to any institution or organisation that wishes to apply. Please go to the SEAHA website for details of how to apply: seaha-cdt.ac.uk/mobile-heritage-lab/apply/ or contact Dr Josep Grau-Bove who is the MHL lead: josep.grau.bove@ucl.ac.uk

E-RIHS.uk



UCL ISH leading the UK path to the European Research Infrastructure for Heritage Science

The study of cultural and natural heritage is a global challenge for science. Innovative scientific research, management and conservation of heritage requires specialist facilities, complementary skills and knowledge from a range of disciplines. To respond to this challenge, UCL ISH is involved in coordinating the UK hub for the prestigious European Research Infrastructure for Heritage Science (E-RIHS), coordinated by Prof May Cassar.

The consortium aims to transform research on heritage interpretation, preservation, documentation and management on an unprecedented scale. By building an international research infrastructure, it will provide state-of-the-art tools and services for interdisciplinary research communities. As a result, heritage scientists and their collaborators in research institutions and heritage organisations will gain access to world-class facilities internationally to develop research capabilities in a coordinated and simplified way.

New vision for heritage science

The consortium will facilitate advanced scientific research through an integrated access to cutting-edge technologies, instruments, archives and expertise. It will operate through four key platforms:

- FIXLAB for immovable analytical facilities
- MOLAB, a fleet of advanced mobile instruments that travel to a site
- DIGILAB for online scientific data and tools
- ARCHLAB for physical archives

By connecting these platforms, E-RIHS will drive innovation in data science, large-scale instrumentation and non-invasive portable research technologies.

Building blocks of the European Infrastructure for Heritage Science

Since its launch in 2017, E-RIHS has developed into a network of sixteen countries, each with many leading research and heritage institutions. The first step for this ambitious project is the success of the Preparatory Phase (2017-2020) to establish the foundations of the infrastructure along with strategic plans for operations, scientific development, training and sustainability. Following the construction and implementation phases (2022-2027), the E-RIHS research infrastructure consortium will become fully-functional.

British heritage science powerhouse

The British hub of E-RIHS, coordinated by UCL ISH, boasts excellent research capabilities. Our partners include world-leading museums, such as the British Museum and the National Gallery; scientific facilities, such as Diamond Light Source; databases such as Archaeology Data Service and research and heritage organisations including Historic England. E-RIHS UK also works with universities and research facilities from York and Glasgow to Cardiff and Brighton.

The UK hub is actively participating in the international activities of E-RIHS preparatory phase, leading on the creation of the consortium's data policies, risk management and interoperability. UCL ISH is responsible for the development of E-RIHS Academy, a bespoke training suite for heritage scientists and providers of access to the infrastructure facilities. E-RIHS Academy is co-designed with European partners and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). It will develop an online course, training workshops and educational materials. The work with E-RIHS demonstrates the leading role of UCL ISH in the development of heritage science and future skills and research capabilities.

People

E-RIHS.uk lead: Prof May Cassar

E-RIHS.eu lead: Prof Matija Strlic



ISH photo competition

UCL ISH photo competition winners

This year, dozens of UCL staff and students entered outstanding photographs on the theme of 'Transformational Heritage'. The entries were judged by UCL ISH Director Professor May Cassar, Chief Curator at the V&A Catherine Ince, and last year's winner Ahmed Kawser.

First place

'Shithouse to Penthouse – The Gentrification of Hackney Wick' by Maija Powell, UCL Energy Institute Administrator

Not all transformation is positive. With the redevelopment of Hackney Wick we've seen the human geography stamped over to become a bouji-penthouse version of creative warehouse district that was part of the city's cultural core. Still, the radical spirit is caught in protest graffiti, but for how long will this culture be sustained?



ISH photo competition

Second place

'The Westway Trust' by Charlie Thorneycroft, Energy Institute MSc student

A stone's throw from Grenfell Tower, the football pitches owned by the Westway Trust demonstrate what can be achieved when this community comes together in the wake of injustice. Founded in 1971 following a four year campaign to reclaim the land under the Westway and prevent the further destruction of homes, the Westway is now home to sports, arts and community spaces.

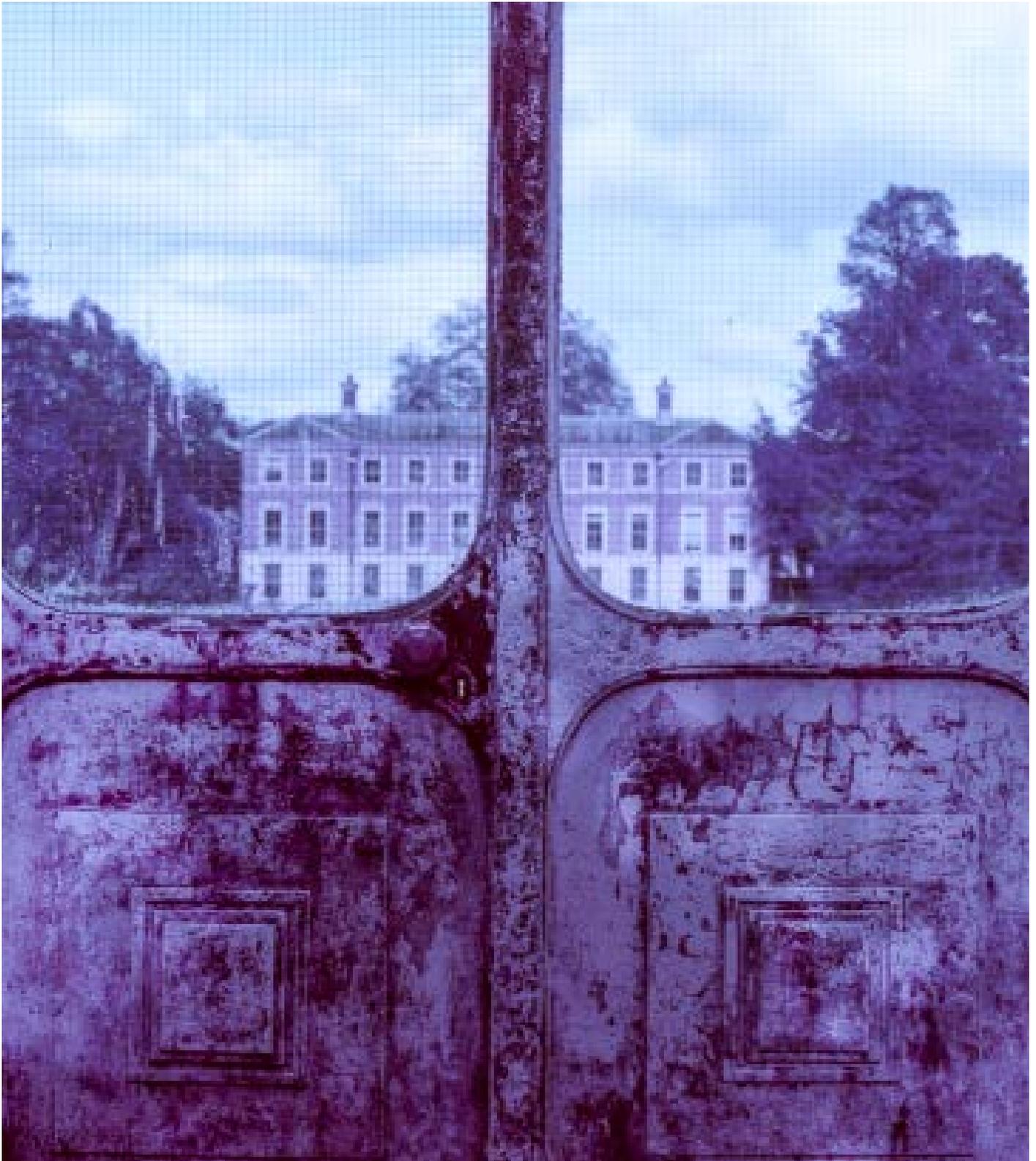


ISH photo competition

Third place

'Kew Glasshouse – Lomopurple' by Mark Kearney, SEAHA PhD Student

The flow of entropy cannot be stopped, but from within this disorder our heritage develops its unique beauty. Through the transformational power of viewing it through a different lens (or in this case a film stock that alters colours) that innate beauty is discovered.



ISH photo competition

UCL ISH photo competition shortlisted entries



'Waterloo Skaters' Andre G. Afonso



'Cosmic Egg' Harry Barton



'Heritage close up' Athanasios Pappas



'A message from the locals' Alkesh Patel



'Battersea' Mark Kearney



'Breathing statues' Magdalena Buchczyk



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