

ARCHITECTURE AND SPACES OF HEALING

WEBSITE

csc.aha.cam.ac.uk/architecture-healing/

VENUE

[The Howard Building at Downing College](#)

University of Cambridge

Regent Street, Cambridge CB2 1DQ

DATE

Thursday, 10 March 2022

12:00 - 19:00

Conference Abstract

In the twenty-first century life expectancy is greater than ever before, thanks to exponential growth in our ability to care for the elderly and to resolve physical problems in younger people. We have medical science to account for this: non-invasive diagnostics, robotic key-hole surgery followed by rapid recuperation and advances in pharmacology are just some of the things that have underpinned these welcome developments. Many old hospitals have been rebuilt - and new ones laid out on the outskirts of towns and cities, surrounded by car parks and standing as technological blocks symbolic of scientific progress.

At the same time, and especially on the back of the biggest global health crisis in a century, mental health has become a matter of huge concern, affecting not just the human activity but also physical well-being of millions. For many, hospital cities are seen as dystopic worlds full of frightening technicality. In this context, how we deploy architecture and how we shape the interior and exterior environments of buildings that provide healthcare are questions of high currency. They are questions not just about how we manage health, going forward, but of how we manage public policy and improve society itself.

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In 2021, it was announced in the UK that the Wolfson Economics Prize would be awarded for ideas towards planning and designing the hospital of the future, as a place that would radically improve patient experiences, clinical outcomes, staff wellbeing, and integration with wider health and social care. Over 250 entries for the competition were received from organisations in 15 different countries.

One of the five finalists was a team led by the architect of well-known classical buildings of the past three decades in the UK and USA, John Simpson. This has inspired the newly founded Ax:son Johnson Centre for the Study of Classical Architecture at the University of Cambridge to partner with the Karolinska Institutet, Sweden's premier university for medical research, in organising the conference *Architecture and Spaces of Healing*. This event will bring historical perspectives on architecture associated with health and wellbeing together with contemporary research and thinking about architectural and environmental design for places of healthcare. The conference also includes a session on recent research concerning neuroscientific understandings of how buildings and their surroundings can affect physical wellbeing.

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Conference Programme

- 11:45 Registration at the Howard Building (ground floor) at Downing College
12:00 Lunch in the Howard Drawing Room
13:00 Welcome and introduction
Dr Frank Salmon, CSCA, St John's College, University of Cambridge
Dr Kerstin Brismar, Karolinska Institutet

Session 1 – Historic Institutional and Public Spaces for Healing

Chair: **Elizabeth Deans**, CSCA, Downing College, University of Cambridge

- 13:15 'Caring for the Body and the Mind in Roman Baths'
Konogan Beaufay, Downing College, University of Cambridge
13:30 'Spaces of Healing in Early Renaissance Rome: The Hospital of Santo Spirito and the Urban Body'
Johanna Heinrichs, University of Kentucky College of Design
13:45 'Competition, Classicism, and Cosmopolitanism. The Architecture of Professional Medicine in Seventeenth Century London'
Matthew Walker, Queen Mary, University of London
14:00 Chaired discussion

14:15 *Coffee break*

Session 2 – Architecture and Neuroscience

Chair: **Frida Brismar Pålsson**, Paradis Produktion

- 14:45 'How a Classic Pattern Aligns with Beauty to Improve Our Health and Well-Being'
Donald Ruggles, Ruggles Mabe Studio
15:00 'The Body Breathes Emotion: How Greek Architecture Moves Us'
Mark Alan Hewitt, Academy of Architecture for Neuroscience
15:15 'Symmetry in Architecture: Toward an Overdue Reassessment'
Michael Mehaffy, Sustasis Foundation; Lennard Institute for Livable Cities
15:30 Chaired discussion

15:45 *Tea break*

Session 3 – Designing Spaces for Healing

Chair: **Alan Short**, Clare Hall, University of Cambridge

- 16:15 'Designing Healthcare Architecture, a Swedish perspective'
Cristiana Caira, Chalmers University of Technology
16:30 'Can residential architecture constitute a part of human EE and contribute to recovery, prevention and stress reduction? - Ways forward'
Hanna Morichetto, Studiochef Bostad (Studio manager residential projects studio)

16:45 'A Hospital, a Building that Can Help Heal the Sick'
John Simpson, John Simpson Architects, University of Cambridge

17:00 Chaired discussion

17:15 *Comfort break*

Panel Discussion

17:30 How can our knowledge of historic architecture, neuroscience, and modern practices shape the design of spaces of healing for the future?

Nicholas Boys Smith, Create Streets

Cleo Valentine, Girton College, University of Cambridge

18:00 Drinks reception in Howard Drawing Room

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Organisers

FRANK SALMON

Dr Frank Salmon is the Director of the Ax:son Johnson Centre for the Study of Classical Architecture, Associate Professor in History of Art and Fellow of St John's College, University of Cambridge. Frank is an architectural historian specialising in the classical tradition in architecture, especially in relation to Neo-classicism and the reception of Graeco-Roman Antiquity in the eighteenth and nineteenth centuries in Britain, Europe and further afield. Among his many publications is his book *Building on Ruins: The Rediscovery of Rome and English Architecture*, which won the Spiro Kostof Prize of the Society of Architectural Historians (USA) and, jointly, the Whitfield Prize of the Royal Historical Society. His edited volume *The Persistence of the Classical* formed a festschrift for his doctoral advisor, the late Professor David Watkin, to whose position he succeeded at Cambridge in 2006. He is a Fellow of the Society of Antiquaries, a former member of Historic England's national Advisory Committee and a current Trustee of Sir John Soane's Museum, London.

KERSTIN BRISMAR

Dr Kerstin Brismar, Professor since 1999 in Endocrinology/Diabetes Research at Karolinska Institutet, has 50 years of clinical experiences, and 40 years of research how to prevent late diabetes complications and type 2 diabetes including the importance of lifestyle. She is the co-founder of KI-Lifestyle4Health, a network of scientists and PhD students at Karolinska Institutet.

FRIDA BRISMAR PÅLSSON

Frida Brismar Pålsson is devoted to the field of learning and architecture. She founded the studio Paradis Produktion in 2015, based in Sweden, which analyzes and develops new learning facilities, ensuring better learning and health among students. A great part of her interest lies within environmental psychology and health issues. Being brought up by two medical professors, one in neurology and the other in lifestyle diseases, she wrote her first paper on how neurological development interacts with space and movement, only 18 years old. She regularly gives lectures to architects, educational planners and policy makers about how the built environment affects learning outcomes and overall health.

ELIZABETH DEANS

Elizabeth Deans is the Assistant Director of the Ax:son Johnson Centre for the Study of Classical Architecture, Research Associate in the Faculty of Architecture and History of Art, and Bye-Fellow at Downing College, University of Cambridge. Elizabeth's research focuses on classical architecture of the seventeenth and eighteenth centuries in England and France, with a particular focus on architectural drawing in the classical tradition. Elizabeth has published on architectural drawings of Sir Christopher Wren's draughtsmen and is currently

working on the history of the royal Office of Works. Before coming to Cambridge, Elizabeth held university posts in the US at George Washington University and the Smithsonian.

Speakers

KONOGAN BEAUFAY

Dr Konogan Beaufay is Ax:son Johnson Morgn Fellow at the Centre for the Study of Classical Architecture. After an education in Archaeology and Art History in Belgium, Konogan moved to the UK for a master's, then a DPhil in Classical Archaeology at the University of Oxford, where he completed a doctoral thesis entitled 'The Roman public baths of Central Italy during the Imperial period: an architectural study'. He specialises in Roman architecture, construction, and technology, focusing on the Imperial period, and has a keen interest in various aspects of digital archaeology. He has also been involved in several excavation projects across the Mediterranean, most recently in Italy (Aquinum, Portus).

Paper abstract:

Famously described by a twentieth-century scholar as 'palaces of the people', Roman baths often evoke notions of hygiene, socializing, luxury, and sensorial pleasures, while the activity of bathing was, in ancient times already, ranked alongside the pleasures of wine and flesh as one of the earthly, bodily pleasures that made a (Roman) life worth living. Yet the same type of sources also makes it clear that in some baths, the body was therapeutically catered for, and the mind, spiritually and intellectually. 'Caring for the Body and the Mind in Roman Baths' will therefore consider, through a range of archaeological and literary sources from various areas and periods of the Roman Empire, the role of baths in caring for the body and the mind of their users—or sometimes their failure to do so. Areas of investigation will include the architecture and design of bath buildings, the water and heating technology employed to run them, their decoration, be it architectonic, sculptural, or parietal, and the facilities and services offered therein, between immersion pools and sweat rooms, massages and depilation, palaestras and libraries.

JOHANNA HEINRICHS

Dr Johanna Heinrichs is Assistant Professor in the School of Architecture at the University of Kentucky College of Design, where she teaches courses in the history and theory of architecture and urban form. Johanna earned her PhD in the Department of Art and Archaeology at Princeton University and her MPhil in History of Art from the University of Cambridge. In addition to her work on urbanism and hospitals in Sixtus IV's Rome, she has published essays on architecture and landscape in early modern Venice and its territories. She is currently preparing a book manuscript on Andrea Palladio's Villa Pisani at Montagnana and villa culture in the Renaissance Veneto. Her research has been supported by the Gladys Krieble Delmas Foundation and the Italian Art Society.

Paper abstract:

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'Spaces of Healing in Early Renaissance Rome: The Hospital of Santo Spirito and the Urban Body' examines Rome's Hospital of Santo Spirito, rebuilt from 1473-1476 by Pope Sixtus IV, in the context of his ambitious program of urban renewal. It argues that Sixtus conceived the renovation of Rome as the care and healing of a decrepit, diseased body. His curative vision invoked principles of ancient and medieval medicine, with which it can be shown he was familiar, and went so far as to relate aspects of the city's infrastructure and institutions to bodily organs and functions. Santo Spirito's prominence in this urbanistic program derived from its highly visible position in the Vatican Borgo but also from its symbolic role as the 'heart' of the Sistine urban body, the locus of Christian charity. Sixtus used the hospital—both its architecture and its decoration—as a prime vehicle through which to promote his vision of urban health.

MATTHEW WALKER

Dr Matthew Walker is a historian of seventeenth and eighteenth-century British architecture, Lecturer at Queen Mary, University of London, and Fellow of the Royal Society. Matthew is the 2021/22 Early Career Fellow at the British School of Athens researching the history and knowledge of Greek architecture before the 1750s. Matthew joined Queen Mary in 2018, having previously taught in the architecture school of the University of New Mexico, and in the art history department of Oxford University before that. Dr Walker has held an Andrew W. Mellon Postdoctoral fellowship at Oxford. His first book, *Architects and Intellectual Culture in Post-Restoration England* was published by Oxford University Press in 2017 and is currently working on two new projects: The first is a book about British and French engagement with ancient Greek and Eastern Mediterranean architecture in the long seventeenth century. It will show that Western European understanding of Greek architecture was more sophisticated and widespread in the period than has previously been thought. The second is an edition of the complete correspondence of Sir Christopher Wren. Matthew has also published on medical architecture in London in the late seventeenth century, on architecture's role in the early Royal Society, and on the administration of the rebuilding of London after the Great Fire.

Paper abstract:

'Competition, Classicism, and Cosmopolitanism. The Architecture of Professional Medicine in Seventeenth Century London' explores the medical world in the seventeenth century was dominated by professional, institutional, rivalries. Organisations such as the Barber-Surgeons Company and the College of Physicians regularly competed over who had the right to heal the sick, and who got to control pharmaceutical regulation in the city. These tensions were only exacerbated by the Great Plague of 1665 and the Great Fire the year after. This paper will explore the architectural theatre of this broader medical conflict. All these institutions built major buildings in this period and commissioned elite, classical, architects such as Inigo Jones, John Webb, and Robert Hooke to design them. In their designs, these buildings explicitly advertised the internationally acquired medical credentials of the physicians, surgeons, and apothecaries who commissioned them, as well as their institutions' claims over the right to heal in the city. Ultimately, the paper will serve as a reminder that the buildings of professional medicine, though nominally designed by provide spaces of healing, can also carry

other important meanings: those pertaining to institutional rivalry, professional credibility, and, ultimately, profit.

DONALD RUGGLES

Donald H. Ruggles, AIA, NCARB, ICAA, ANFA is a practicing architect and CEO of Ruggles Mabe Studio, an award-winning boutique residential architecture and interior design firm based in Colorado. Don graduated from the University of Oklahoma with a Bachelor of Architecture. He serves on advisory boards for the Rocky Mountain Chapter of the Institute of Classical Architecture & Art; the University of Colorado Denver, College of Architecture & Planning; the Human Architecture Planning Institute; and the Building Beautiful Institute. His first book, *Beauty, Neuroscience & Architecture: Timeless Patterns & Their Impact on Our Well-Being* (2017), investigates how timeless forms and patterns in design affect our health and well-being. The book was made into a full-length documentary in 2020 titled 'Built Beautiful, An Architecture & Neuroscience Love Story with Narration by Martha Stewart.' It suggests a new, urgent effort is needed to refocus the direction of design to include the quality of beauty as a fundamental, overarching theme in two of man's most important fields — the built and artistic environments.

Paper abstract:

'How a Classic Pattern Aligns with Beauty to Improve Our Health and Well-Being' postulates that beauty can and does make a vital difference in our lives, including improving many aspects of our health. In his presentation, Donald Ruggles suggests that a new, urgent effort is needed to refocus the direction of architecture and art to include the quality of beauty as a fundamental, overarching theme in two of humanity's most important fields of endeavour: the built and artistic environments.

MARK ALAN HEWITT

Mark Alan Hewitt FAIA is an architect, historian and preservationist who lives in Sutton, New Hampshire. Mark has taught for many years in American architecture schools, and also lectured in Art History at Rutgers University. His latest book, *Draw In Order To See*, was published by ORO Editions in 2020. He is working on a study of the architects of the Philadelphia School and is active in the Academy of Neuroscience for Architecture.

Paper abstract:

'The Body Breathes Emotion: How Greek Architecture Moves Us' will use recent research on human empathy and emotional resonances to explore how the Greeks conceptualized their art and architecture to mimic both the natural world and the human psyche. George Hersey, John Onians, and R.B. Onians wrote persuasively about how the Greek language, and its tropes, describe elements of classical architecture in terms of the human body, animal anatomy, rituals, and metaphors of life, soul and death. The words *thumos*, *phrenes*, and *psyche* are particularly rich with in this regard, and all are connected to *breath*, *air* and *wind* in their original meanings. A psychologist, Julian Jaynes, also pointed to these terms in his

controversial book on the origins of human consciousness. All of the parts of a typical Greek temple contain rich meanings, and evoke profound emotional responses, that continue to resonate with people today. Science is giving architects and historians new information about how all kinds of buildings affect the body and emotions and will likely help to explain some Greek terms and ornamental forms in the near future. All who believe in the power of classical architecture will benefit from this research.

MICHAEL W. MEHAFFY

Dr Michael W. Mehaffy, PhD is a researcher, educator, author, designer, and planner, and Executive Director of the USA-based Sustasis Foundation as well as the International Making Cities Livable conference series. Michael has held appointments in teaching and/or research at seven universities in six countries, and he is on the editorial boards of four international journals of urban design. He was the first Director of Education for The Prince's Foundation in London, where its Education Programme developed under his direction later evolved into a master's and PhD programme in sustainable urban development at the University of Oxford. He was also Chair of the Academic Committee for the Future of Places, a conference partnership and research project with UN-Habitat generously funded by the Ax:son Johnson Foundation. He is also an international consultant to governments, NGOs and companies on achieving better-quality, more human-centred urban development.

Paper abstract:

'Symmetry in Architecture: Toward an Overdue Reassessment' looks at the mathematical concept of symmetry, in its fullest sense, has been figured large in architectural history up to the early twentieth century. Yet for most of the last century, architecture and related disciplines have marginalized the consideration of symmetry in favour of a 'functionalist' conception of design. More recently, dramatic developments in mathematics, physics, biology, neuroscience, environmental psychology, and other fields have given new dynamism to the ancient topic of symmetry. These findings carry implications for architecture and other environmental design professions that have, until now, been poorly understood, where they have been considered at all. Dr Mehaffy will discuss the new findings (including results of research with the mathematician Nikos A. Salingaros) and what they reveal about current design practices as well as shedding new light on historic precedents. He concludes that there is an urgent need for a reassessment, and a new agenda of research and practice.

CRISTIANA CAIRA

Cristiana Caira is artistic professor in Healthcare Architecture at the Division of Building Design, Department of Architecture and Civil Engineering at Chalmers University of Technology, Sweden. Cristiana has over 20 years of experience in planning complex healthcare environments in Scandinavia and internationally. At Chalmers, her role is to create a bridge between practice and academia, by contributing to education, applied research and dissemination and sharing research-based knowledge. She is member of the steering group of the Center for Healthcare Architecture, CVA. Cristiana is also a Board

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member of the European Health Property Network. In addition to Chalmers, Cristiana is lead architect, partner and board member of White Arkitekter, Sweden's largest architectural firm. At White, she has led healthcare projects including the award-winning Södra Älvsborg Hospital (SÄS) Psychiatric Clinic, the Queen Silvia Children Hospital in Gothenburg and the award-winning extension for the Panzi Hospital in Congo, in collaboration with the 2018 Nobel Peace Prize Laureate Dr Mukwege. Cristiana is currently Healthcare Design Lead Architect within the expert international team appointed to design Cambridge Children's Hospital.

Paper abstract:

'Designing Healthcare Architecture, a Swedish perspective' looks at how recent Scandinavian hospitals projects testify to a generational shift in healthcare architecture, investigating how architecture can enhance mental and physical well-being. In modern history of hospital architecture, the Vitruvian Triad has been highly challenged by the predominance of functional aspects, ruling spatial arrangements, flows and dimensions. However, since the 80s, we have seen an increasing focus on the relation between well-being and architecture, also supported by developments in evidence-based design and environmental psychology, in particular on hospital settings. Lately, the rising climate crisis is urging action on net-zero carbon ambitions in all projects, including traditionally carbon intensive buildings such as hospitals. This presents a challenge to architects designing healthcare facilities. There is a need to balance between complex functional and technical requirements, high sustainability goals and the ambition to shape environments experienced as attractive where well-being and health promotion for staff, patients and families are in focus. The lecture will take its starting point in the multitude of challenges mentioned above, moving into processes and methods from a Swedish perspective, and ending with the case study of the award winning SÄS Psychiatric Clinic

HANNA MORICHETTO

Dr Hanna Morichetto, Architect SAR/MSA, PhD is a researcher and practicing architect with a special focus on residential architecture and health. She recently defended her PhD thesis 'Residential Architecture and Enriched Environments' and currently works as a practicing senior lead architect at Liljewall Architects, Sweden. She also collaborates with researchers and teaches at Chalmers University of Technology, Department of Architecture and Civil Engineering, Gothenburg. Her research focuses on residential architecture and its potential health promotive effects through environmental enrichment and multisensory stimulation. It also investigates how residential design can promote social sustainability. She has an extensive background from residential design projects both as a consultant and from residential development business.

Paper abstract:

'Can residential architecture constitute a part of human EE and contribute to recovery, prevention and stress reduction? - Ways forward' examines the concept of enriched environment (EE), and how it has long served as model for studying the diverse effects of the environment on mental health underpinned by changes to the structure and function of the

brain. Although EE is regarded promising in healthcare and rehabilitation contexts, and overwhelming evidence exists from animal models, there is still limited evidence for a defined, corresponding model for humans in clinical settings. However, there is now emerging interest related to the architecture and design of residential homes and workplaces being health promoting or restorative. Aiming at developing and describing such a model, this talk puts forward different concepts - Spatial extension, Movement, Materials and detailing - how residential architecture could provide opportunities for EE providing potential stress reduction. The concepts will provide point of departure for further qualitative and quantitative studies how architecture and design could potentially contribute to a holistic health care concept where the home is set to be a new epicentre for health promotion and personalised care.

JOHN SIMPSON

John Simpson is principal of John Simpson Architects. He is a leading proponent of New Classicism and believes Architecture, as a public art, by necessity must draw on our collective experience and traditions as a society. In order to create towns and cities that are inclusive, Architecture needs to use a familiar language of building that everyone can relate to and understand. John Simpson has had considerable influence in bringing the Classical tradition into the public eye. Such works include the Queen's Gallery at Buckingham Palace, his buildings at Poundbury for the Duchy of Cornwall, his work at Kensington Palace for the Queen's diamond Jubilee and the DMRC rehabilitation facility for injured service personnel at Stanford Hall near Loughborough. His work within educational establishments includes that at Gonville and Caius College and at Peterhouse in Cambridge, at Lady Margaret Hall in Oxford, his debating chamber and quadrangle at McCrum Yard, at Eton, his music recital rooms at the Royal College of Music in London and the School of Architecture buildings at the University of Notre Dame in the USA. He is a visiting Professor (2021-24) in the Faculty of Architecture and History of Art and visiting Fellow at Gonville and Caius College, University of Cambridge.

Paper abstract:

Today in the world of medicine it is still extremely rare to find a hospital with an architecture that is pleasing and designed to help make its patients feel better. 'A Hospital, a Building that Can Help Heal the Sick' will explain how John Simpson's design for the Defence Medical Rehabilitation Facility, recently completed at Stanford Hall near Loughborough was conceived, so as to provide just such a healing environment to help wounded service personnel to recover from their trauma and injuries. He will talk about the patterns that he has identified that are significant to a building if it is to help in the recuperation and rehabilitation of patients. He will outline how new emerging research data from the field of neuroscience is reinforcing the validity of empirical architectural models whose origins go back to classical antiquity and the monastic infirmaries of the Renaissance. He will also refer to his submission for the Wolfson Economics Prize last year, "Planning and designing the Hospital for the Future", Together with Don Ruggles and Nicholas Boys Smith this submission outlined a 'Complete Hospitals Framework' to help commission the right

kind of buildings for our hospitals so that they become better places for patients to be in with facilities tied directly to the communities they are intended to serve.

Chairs

ALAN SHORT

Professor Alan Short has been the Professor of Architecture at the University of Cambridge since 2001, Head of Department from 2001-04. Alan's work focuses on the design of sustainable buildings. He won the RIBA President's Award for 'Outstanding Professional Practice-located Research' 2007 for the project 'Design for the Warming Environment' and the 2009 RIBA President's Commendation for Outstanding University-located Research for his work on the resilience of the NHS Estate. He is a PR China Ministry of Education Distinguished Professor, a Guest Professor at Zhejiang University and was the 2014 George Collins Fellow of the Society of Architectural Historians and 2013-14 Geddes Fellow at the University of Edinburgh. He also designs buildings, one of very few architects in the UK deeply involved in Higher Education and Research, maintaining Short & Associates Architects as a vehicle for putting research concepts into practice. His research group has produced a film of its work on the NHS Estate, 'Robust Hospitals in a Changing Climate' at <http://sms.cam.ac.uk/media/1559781> which won the tv/e Global Sustainability Film Award 2013 at BAFTA. He was appointed to administer and monitor the NHS Energy Efficiency Fund 2013-14 with the Professor of Sustainable Engineering Peter Guthrie, reporting to the Under Secretary of State for Health.

NICHOLAS BOYS SMITH

Nicholas Boys Smith MA MPhil FRSA AoU, is the founding Director of the social enterprise, Create Streets and the Create Streets Foundation. He is the author of influential studies of the relationship between urban design and morphology with well-being, value and popularity including Heart in the Right Street (2016), Beyond Location (2017) and Of Streets and Squares (2019). Nicholas was co-chair with the late Sir Roger Scruton of the Government's Building Better Building Beautiful Commission whose final report, Living with Beauty, has been widely praised and is influencing the debate on planning and place-making globally. The former Secretary of State for Housing and Community described it as 'seminal' and as 'one of the most important reports for a number of years.' In 2020, Nicholas was a member of the expert group advising on the UK Government's White Paper, Planning For the Future. He was recently asked to chair the UK Government's new Office of Place and was a Commissioner of Historic England from 2016-2022.

Create Streets is a social enterprise which exists to help create and steward beautiful and popular 'gentle density' places which residents and neighbours can love for generations for the good of people, prosperity and planet. Research-led, it supports neighbourhood groups, councils and landowners through research, co-design and master-planning.

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CLEO VALENTINE

Cleo Valentine is a multidisciplinary systems designer and neuroarchitectural researcher. Her research explores the relationship between biomorphic design, architectural form and neural inflammation in the built environment. Prior to attending Cambridge, Cleo studied at the University of Oxford and McGill University in Montreal, Canada. She has worked as the Architectural Health Lead at Living Systems - an architectural research practice and design consultancy - and as a computational systems designer at Open Systems Lab (formerly Wikihouse) - a non-profit R&D company developing digital technologies to transform housing, construction, planning, and cities. She has previously held positions as a Research Fellow at the Centre for Conscious Design, a visiting lecturer at the Royal College of Art and a guest tutor at the Architecture Association in London. Cleo has also presented her research at events hosted by Foster + Partners, EIT Climate-KIC and the London School of Architecture.

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