



Conference I London 26-27th April 2023

Agenda



Organised by

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**UNIVERSITY OF
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SHAPE TO FABRICATION

Simply Rhino welcome you to Shape to Fabrication 2023, the 8th iteration of our AEC and Design focused conference, in partnership with the School of Architecture and Cities, University of Westminster. We are looking forward to an inspiring two days of presentations, discussion, and conversations with the Shape to Fabrication community.

For everything **Shape to Fabrication** please [visit our website](#).

Meet our **Shape to Fabrication 2023 Conference Friends** - we encourage you to take the opportunity of saying hello to our STF Conference Friends - you'll find more information about them at the end of agenda.

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Conference Day 1 - Wednesday 26th April 2023
Hogg Lecture Theatre, University of Westminster

08:45
Registration Opens

09:30
Conference Welcome

Paul Cowell - Simply Rhino

Professor Harry Charrington - Head of School of Architecture + Cities, University of Westminster

09:40

Workplace of the future: Google Bay View – using emergent technologies to enable innovative and sustainable design

Heatherwick Studio - Kyriakos Chatziparaskevas and Pablo Zamorano

This presentation will focus on Heatherwick Studio's approach to the design and construction of Google Bay View HQ in California, the largest LEED v4 BD+C: NC Platinum certified project in the world.

10:10

Re-imagining “Total Architecture” from the internet up

Arup - Fernando Ruiz

Proactive multidisciplinary collaboration has always been at the heart of successful projects. Ove Arup defined that true integration of all the specialist knowledge as "Total Architecture". This talk explores ways to build on this key principle from the internet up, supporting the Golden Thread and enabling automation whilst harvesting data to unleash design models yet to be explored.

10:30

Innovating towards Data-Centricity

Henning Larsen - David Fink

Speckle - Jonathon Broughton

Join David and Jonathon as they explore how Henning Larsen is innovating towards Data-Centricity with the help of Speckle. Using a selection of insightful case studies from the global studio, David will detail how Data-Centricity is part of Ramboll's Transformation Construction initiative and how Speckle enables Henning Larsen's multidisciplinary teams and collaborators to work together in an agile and dynamic way.

11:00

Panel Discussion #1

11:20

Morning Break



12:00

DesignOps: Performance driven design pipelines

Foster + Partners - Martha Tsigkari, Marcin Kosicki, Sherif Tarabishy and Oscar Borgstrom

Foster + Partners' Applied R+D team (Applied Research + Development) will detail some of their advances in interactive design interfaces, high-performance distributed computing and optimisation, and custom analytical software to address all aspects of this generate-analyse-evaluate loop that is so critical to improving design outcomes.

12:30

Beyond the code: A Quest in validating structural design driven by fabrication

YIP Structural Engineering London - Manja van de Worp

Manja looks to address the opportunities of engineering solutions driven by fabrication which are outside the standard code of practice. How can we share and consolidate engineers' links to fabrication driven design projects, requiring unique performance specifications?

13:00

Panel Discussion #2

13:20

Lunch Break

14:30

Sugar Slab – Upcycling industrial waste into a construction material for interlocking kit-of parts systems designed for disassembly and reuse

Grimshaw Design Technology - Elena Shilova

Critical environmental impact of the construction industry challenges architects to seek for alternative sustainable construction systems. At the same time, existing industrial processes from other industries generate considerable amount of waste. For instance, almost two thousand million tonnes of sugar cane are produced worldwide yearly for sugar refineries, resulting in six hundred million tonnes of fibre *bagasse* as by-product. Harvesting this opportunity, Sugar Slab project aims to using bagasse as the core resource for a novel material system.

14:50

Adaptive Digital-Physical Workflows in Wood

Xylotek - Martin Self

Xylotek specialises in the technical design, fabrication and construction of non-standard timber structures. Through a series of case-study projects, Martin will discuss how particular design workflows were deployed for projects using different formats of wood – from steam-bent green ash to large-scale demountable cross-laminated-timber panels.



15:10

Democratising Offsite, Digitising Onsite Construction

The Circular Factory - Alicia Nahmad

Advances in digital fabrication and computation enable us to address the increasingly urgent requirement of decreasing embodied energy and waste in construction. However, access to digital fabrication processes is not equally distributed. Through case studies, Alicia reflects on how human-compatible novel digital design and construction methods can augment onsite construction techniques by reducing material waste whilst building beautiful and efficient structures.

15:30

Panel Discussion #3

15:50

Afternoon Break

16:30

3D Printing as a means of improving sporting performance

Metron - Dimitris Katsanis

3D printing is versatile, can be used to manufacture equipment for a wide range of sports and is likely to grow more affordable over time as CFD, design, and printing technology develop. In the future, additive manufacturing will play an increasingly important role in influencing the outcomes of races and other sporting events as it becomes more widespread. To attain this versatility, the product has to be designed with the manufacturing process in mind.

17:00

Technology Update + Q&A

McNeel - Scott Davidson and team

Current news & future plans for Rhino & Grasshopper, updates on development frameworks such as rhino3dm, Rhino.Compute and Rhino.Inside. Rhino & Grasshopper's on-going web technology projects increasingly means these tools being deployed anywhere, hear how these may impact your office workflow. Latest on Rhino v8 & Grasshopper v2. McNeel staff present at the conference includes – Bob McNeel, David Rutten, Steve Baer, Scott Davidson, Brian Gillespie, Luis Fraguada, Japhy Walton, Andy Le Bihan, Andy Payne, Daniel Piker, Will Pearson, Carlos Perez, Ehsan Iran-Nejad, Vanessa Steeg and Kike Garcia.

17:30

End of STF Day 1

This evening from 18:30, sandwiched between the 2-days of the STF Conference, and following their STF Presentation earlier on the 26th, Speckle invite you to join them for 'A Night with Speckle In Real Life - details here: <https://www.eventbrite.co.uk/e/a-night-with-speckle-in-real-life-irl-tickets-549130352667> Sign-up to join the Speckle team!

Conference Day 2 - Thursday 27th April 2023
Hogg Lecture Theatre, University of Westminster

09:30

Role of Architects and Engineers in the Metaverse and its relevance to the AEC

Zaha Hadid Architects - Henry David Louth

Arup - Conor Carson Black

The metaverse foregrounds the value of user experience (UX) focused design, end-user motivation through gamification, and social engagement driven economics through so-called spatial experiences. There is a deep compatibility between the design ethos, goals, technology, and design and creation and the massively multi-player, immersive experiences of the metaverse. The session outlines, through a series of use case study applications, the role of architecture, engineering and construction disciplines (AEC) to serve and host a variety of productive human interactions and activities including work, leisure, retail and cultural experiences.

10:00

New Adventures in Hi (Tech) – Low (tech) with Bamboo

AKT II - Edoardo Tibuzzi

Bamboo is a renewable natural resource, its durability and sustainability make it a good contender for architectural applications. AKT II applied research team tested its use in various challenging conditions, learning from the unpredictability of the low-tech approach, applying computational principles and trialling digital methods to resolve the challenges of the structural connections. In this session we will explore how those principles were applied in some live research installations from a modular monsoon shelter, to an art installation as a symbol to remind us of the current climatic challenge.

10:30

Panel Discussion #4

10:50

STF Workshop Overview

In the days before the Conference we're holding in-person STF Workshops, this is an opportunity to find out what we learnt, from those who delivered the sessions.

11:10

Morning Break

11:50

On the Way to Convergence

Herzog and de Meuron - Michael Drobnik and Vasilis Kalisperakis

While hand drawings, physical models and mock-ups play an important role in Herzog & de Meuron's design process, all projects are underpinned by the multidisciplinary Design Technologies team. We choose the best tools for each specific task, which allows our design process to simultaneously occupy both the analogue and the digital.

Convergence of tools, cross-functional team and curiosity for experimentation are approaches for an Integrated Design Experience. Vasilis and Michael will tell stories about Animation, Digital Fabrication and why it may all be interconnected.



12:20

MAKER AND MATERIAL : Explorations in Furniture, Sculpture and Architecture

Joseph Walsh Studio - Joseph Walsh and Martin McGloin

Joseph and Martin will reflect on the studio's maker-led design approach through some of the studio's most renowned projects and how this approach can be scaled and applied to a different design vocabulary through the ODT collaboration, with the aim of re-establishing a contemporary definition of craftsmanship as fundamental to society.

12:50

Panel Discussion #5

13:10

Lunch Break

14:30

Realising Complexity

Foster + Partners - Adam Davis, Khaled Elashry and Marios Tsiliakos

Innovative architecture often requires innovative digital systems and workflows. Grasshopper has become ubiquitous in academia and practice, yet the revolution it has created isn't over. A further stage in this sea change is all about collaboration, combining the results of multiple designers, disciplines and software in a seamless experience. Foster + Partners Applied R+D team (Applied Research + Development) will show how the company is leading this shift to collaborative design systems through their extensive use on recent built work and projects on-site: a mixed-use development in San Francisco's Dogpatch neighbourhood, the Mobility Pavilion for the Dubai World Expo 2020 and the Lusail Towers in Qatar.

15:00

Eliminating the Two-week Turnaround

Ladybug Tools LLC - Chris Mackey

Thornton Tomasetti - Jeroen Janssen

Has the quality of your project ever suffered because you didn't have the right information at the time you had to make a decision? Have you ever had an energy modelling consultant send you a report two weeks after you gave them design documents and all you can say is "great but the design is completely different now?" If so, you are not alone and you're just experiencing an issue that persistently plagues today's building industry. In this presentation, Chris and Jeroen will examine the root causes of the "two-week turnaround" problem starting from the biggest reasons why energy modelling takes so long and moving down the list of challenges that make collaboration over building simulation difficult.

Please note that timings in this agenda are approximate and subject to change.



15:30

Developing the Architectural Symbiocene: at the intersection of natural, physical, and digital

PLP Architecture - Abhinav Chaudary

The Symbiocene was described by environmental philosopher Glen Albrecht as opposed to the Anthropocene, when our species begins to renew a symbiotic relationship with natural systems, psychologically and technologically. Over the last two decades, there has been an inching towards these ideas in the fields of architecture and design and as we progress deeper into a fossil-fuel-free future, it is exciting to explore how natural materials and biological processes can be (re)integrated into the architecture and construction industry. As a part of PLP Labs' ongoing research into developing sustainable material systems, we have conceptualised the use of timber at various scales and, more recently, biomaterials such as mycelium composites. Mycelium, the vegetative part of fungi, can be combined with almost any organic formwork or substrate, including waste generated in our homes and workplaces.

15:50

Panel Discussion #6

16:10

Afternoon Break

16:50

Optimisation On-site: Reconciling designs with as-built conditions

SumPoint - James Coleman

3D modelling is often considered a task that takes place exclusively during the planning phases of a project. This is a missed opportunity and misconception. We argue that 3D modelling is even more critical during execution phases when used as a means of understanding onsite conditions and directing activities.

17:10

Building the Plane as You Fly It: Fabricating Facades at Extreme Scale, Speed, and Complexity

Front, Inc. - Keyan Rahimzadeh

It is often impossible to predict in advance the challenges that one will encounter throughout the design, fabrication, and construction process. Having experienced this over the course of hundreds of built projects, at Front we have developed an approach to computational design that emphasises flexibility, adaptability and problem-solving. In this talk we will share how this approach enabled the design, fabrication, and installation process for the Lusail Plaza Towers - a set of 4 high rises consisting of 23,000 individually unique and 3-dimensional facade panels. Through our close collaboration with the facade contractor, we leveraged Rhino's inherent flexibility and robustness along with our adaptive digital infrastructure to tackle a series of challenges as they arose.

17:30

End & Thanks

Paul Cowell - Simply Rhino

Professor Harry Charrington - Head of School of Architecture + Cities, University of Westminster

18:00 - 19:00

Shape to Fabrication 2023 End of Conference Drinks - Let's Celebrate!

SHAPE TO FABRICATION

chaos



Chaos: 3D Rendering and Simulation Software, featuring V-Ray. Chaos develops visualization technologies that empower artists & designers to create photorealistic imagery and animation across all creative industries. <https://www.chaos.com/>

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Graphisoft empowers teams to design great buildings through award-winning software solutions, learning programs, and professional services for the AEC industry. We believe that integrating people, workflows, and information in real-time is critical for your success, where our award-winning solutions provide unrivalled open BIM workflows. <https://graphisoft.com/>

PACKHUNT

⚡ Packhunt is a platform for the computational community to build, share and sell their online tools. Built to make Grasshopper work in the cloud & run complex models fast and in a scalable way. Join our Early Adopter Program, start for Free & access new functionalities as we grow.

Website: <https://www.earlyadopter.packhunt.io/>



A team from McNeel (Rhino3D and Grasshopper3D Developers) are in the room - they would love to say hello and hear from you. <https://www.rhino3d.com/>

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Workstation Specialists are one of the UK's leading computer workstation manufacturers. Their products include desktops, mobile workstations & rackmount solutions catering to all professional industries. Having proudly built computer workstations for over 35 years, they offer a leading product portfolio backed by in-depth industry knowledge. For further details, please contact +44 (0) 800 180 4801 or e-mail sales@wksmail.com



AdaptivePartsEnvironment makes the power of Grasshopper accessible to all Rhino users. The Tool wraps Grasshopper-Definitions into dynamic objects or small applications with an integrated User Interface so anybody can use those tools without having to access (or know) Grasshopper. That way everyone can create and share their own tools and/or create libraries of "adaptive parts".

AdaptivePartsEnvironment is developed by [Rhenso](#), a spin-off from the 3d design office [imagine-computation](#), which has been working in the automation of design processes for over 10 years. www.adaptiveparts.com



ShapeDiver is an online platform that simplifies hosting and sharing Grasshopper files online. We provide the tools and scalable infrastructure to help you transform your library of Grasshopper files into powerful and shareable web applications. Share the full power of your parametric design files with partners, clients, and other non-technical stakeholders wherever they are while protecting your IP. <https://shapediver.com>



MKS DTECH is a trusted software development company that provides services for the architecture, engineering, and construction (AEC) industry. Their flagship product, the BEAM Rhino to Revit plugin, streamlines the process of importing 3D models from Rhino into Autodesk Revit, improving collaboration and workflow efficiency among architects, engineers, and designers. BEAM allows designers to extend Rhino geometry with BIM data and export to Autodesk Revit or IFC4, simplifying the creation of complex, information-rich models. With its intuitive panel, designers can manage objects, materials, and custom parameters, and BEAM's support for computational tools like Grasshopper and Dynamo empowers designers to handle complex geometry and projects with ease. Top architectural and engineering companies worldwide use BEAM, making it a powerful tool to enhance project delivery capabilities. <https://www.mksdtech.com/>



AEC has rapidly become a data focused industry with tools emerging to facilitate the management of this data. Speckle is open source digital infrastructure for anything designed in 3D. We handle interoperability between software silos, real-time collaboration, data management, versioning, automation, and more. <https://speckle.systems/>



VisualARQ is a Flexible BIM solution for Rhinoceros 3D. VisualARQ provides architectural features to work with powerful associative architectural objects, dynamic documentation tools and collaborate with other tools through the IFC import / export capabilities. VisualARQ integrates intuitively in the Rhino & Grasshopper design workflow with the shortest learning curve, thus generating any kind of free-form architecture. www.visualarq.com



Lands Design is a professional BIM software for landscape design that works on Rhino, AutoCAD, and Civil 3D. Lands provides a plant database with more than 8000 species, with their own botanical information and customizable display modes in 3D and 2D. Lands provides powerful terrain modelling tools, civil work objects, and integrates intuitively into the Rhino & Grasshopper design workflow. www.landsdesign.com



Established in 2010, DJA has decades of website development and design experience. We provide regular support and manage projects for organisations in the UK and around the globe. Our small team creates content-managed websites, custom database applications and mobile web experiences. We are active in the WordPress and Joomla communities. <https://www.djaonline.co.uk/>

SHAPE TO FABRICATION

Thank you to everyone for joining us at this long-awaited 8th iteration of Shape to Fabrication. We hope you have a fantastic 2-days meeting old-friends and making new ones, and of course enjoying our fantastic line-up of presentations.

The Shape to Fabrication team would love to hear from you if you'd like to be part of a future Shape to Fabrication event. Grab Paul or Steph for a chat - we'd love to hear your thoughts and discuss how you could get involved.

Our special thanks to all our Presenters, Facilitators, Sponsors, and Friends of STF, and of course to the team at our partners for Shape to Fabrication 2023, the School of Architecture and Cities, University of Westminster.

The End - Until Next Time!



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