Author Biographies

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José Antonio Barrera-Vera holds a degree in Building Engineering, a master's degree and a PhD in Graphic Engineering. He has worked as a lecturer and a researcher in the University of Seville (Spain) since 1992. He lectures in both undergraduate and graduate courses and is the Head of the Department of Graphic Engineering. He has published several articles, given workshops, lectures and presented papers in several cities. His main research interest lies in the development of techniques for the documentation of complex geometries through the use of laser scanner and photogrammetry.

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Andreas Bærentzen is Associate Professor at the Department of Computer Science and Applied Mathematics, Technical University of Denmark, where he also received his MSc and PhD degrees. His research focus is on the representation and manipulation of digitally represented shapes, but he is broadly interested in computer graphics and geometry processing.

Ralph Bärtschi is a physicist and mathematician with long-time experience in software development and the direct control of computer-controlled machines for fabrication. He has profound knowledge in digital signal processing, geometric algorithms, and numerical methodologies. He is a founding partner of ROB Technologies AG.

Simon Bechert is a structural engineer and Research Associate at the Institute of Building Structures and Structural Design (ITKE) at the University of Stuttgart. His main research focusses on lightweight timber constructions and the structural design of integral timber joints.

Philippe Block is Associate Professor at the Institute of Technology in Architecture, ETH Zurich, where he directs the Block Research Group (BRG) together with Dr. Tom Van Mele, focussing on equilibrium analysis, computational form finding, optimisation, and fabrication of curved surface structures. He studied architecture and structural engineering at the Vrije Universiteit Brussel in Belgium and the Massachusetts Institute of Technology (MIT) in the USA, obtaining his PhD in 2009. With the BRG and as founding partner of Ochsendorf DeJong & Block (ODB Engineering), he applies his research to practice on the structural assessment of historical monuments and the design and engineering of compression structures.

Pengbo Bo is an Associate Professor at Harbin Institute of Technology at Weihai, China. His research interests are geometric modelling and geometry processing. He received his PhD. from the University of Hong Kong, where he worked on the problem of freeform surface modelling using Dupin cyclides and developable surfaces. He also received a B.S. and a M.S. degree in Computer Science from Shandong University, in 1997 and 2001, respectively.

Etienne Bouleau has degrees both in civil and geotechnics engineering. After graduation, Etienne Bouleau started his career at RFR office in Paris to work on lightweight and glazed structures, where he worked mainly on the Louis Vuitton's Foundation project. Etienne joined the INGENI SA team in 2010 and focusses on research and development to design vanguard structures such as the Jet d'Eau footbridge in Geneva.

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Kenn Clausen is an architect and parametric designer at GXN, the research and innovation unit of 3XN Architects in Denmark. He attended Aalborg University, specialising in architecture and digital design. He implements and utilises digital tools, workflow strategies, and advanced design technologies in a number of large-scale building projects from the new IOC headquarter in Lausanne to residential towers in Mumbai. He runs Bladerunner at GXN, a research project regarding the implementation of robot technologies in concrete formwork fabrication. His work experiences include Electrotexture LAB in Denmark and UNStudio in Amsterdam.

Xavier De Kestelier is Joint Head of Foster + Partners' Specialist Modelling Group. He has worked on Beijing Airport, Kai Tak Cruise Terminal, Kuwait Airport, and the Yachtplus super yachts. His team has been involved in ground-breaking research in the field of large-scale 3D printing as part of a consortium set up by the European Space Agency to explore 3D printing to construct lunar habitations. Xavier has been a Visiting Professor at Ghent University, Adjunct Professor at Syracuse University, a Teaching Fellow at The Bartlett School of Architecture and since 2010, one of the directors of Smartgeometry.

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Cyril Douthe is a researcher at the IFSTTAR, Department of Material and Structural Engineering and Assistant Professor at the Ecole des Ponts ParisTech. His research activities cover aspects of structural morphology and design of lightweight structures, with an emphasis on problems of geometrically nonlinearity and instability.

Lluis Enrique Monzo received a Diploma in Architecture from the Polytechnic University of Catalonia (UPC) in 2008 and a Master of Architecture from the Architectural Association School of Architecture (AA) in London in 2011. His Master's thesis, entitled "Cast on Cast System: Architectural Freeform Shapes from Precast Stackable Components", was awarded prizes by the Holcim Foundation in Sustainable Construction in 2011 and 2012. In 2011, he received a grant to do doctoral studies from the La Caixa Foundation. Currently, he is finishing his PhD at the Chair of Structural Design lead by Professor Joseph Schwartz in the Swiss Federal Institute of Technology Zürich.

Ursula Frick holds a degree in architecture from the University of Innsbruck. She worked as architect and consultant in computational design and digital fabrication in the EU and the USA. She has held workshops and lectured at the AA, PennDesign, SCI-arc, and Tamkang University Taipei. In 2007, together with Thomas Grabner she founded the collective [uto]. They developed several software plugins that enhance workflow in parametric software. In 2014, she joined the Block Research Group (BRG) at ETH Zurich as PhD researcher in the NCCR Digital Fabrication. Her current research is concerned with structural design of discrete-element assemblies, taking into account constraints imposed by digital fabrication and automated assembly processes.

Reto Furrer is a structural engineer with special competences in lightweight structures, wind engineering, and parametric design. After receiving his engineering degree at Lucerne University of Applied Sciences and Arts (HSLU) he worked as a scientific assistant at the Competence Center Façade and Metal Engineering at HSLU (2008 – 2010). Since 2009 he is part of the firm Dr. Lüchinger+Meyer Bauingenieure AG in Zurich. As a senior engineer, an active member of the structural mechanic group as well as an experienced project leader, Reto Furrer has been responsible for many outstanding Swiss and international projects such as the wooden roof structure of the Arch_Tec_Lab building at ETH Zurich.

Fabio Gramazio is an architect with multi-disciplinary interests ranging from computational design and robotic fabrication to material innovation. In 2000, he founded the architecture practice Gramazio Kohler Architects in conjunction with his partner Matthias Kohler, where numerous award-wining designs have been realised. By opening the world's first

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architectural robotic laboratory at the ETH Zurich, their research has been formative in the field of digital architecture, merging computational design and additive fabrication through the customised use of industrial robots. Fabio Gramazio's work has been widely published and internationally exhibited, and is comprehensively documented in the book "The Robotic Touch – How Robots Change Architecture".

Jens Gravesen is Associate Professor at Department of Computer Science and Applied Mathematics, Technical University of Denmark. He received his Cand. Scient. degree (MSc) in mathematics and physics from the University of Copenhagen in 1980 and his D.Phil. degree from Oxford University in 1988. His research area is geometry, in particular geometric modelling. He has published numerous papers in international journals, books and conference proceedings, has served as program officer for SIAM's activity group on geometric design, and is one of the organisers of the yearly European Study Group with Industry in Denmark.

Felix Günther earned his diploma degree in mathematics from Humboldt Universit¨at Berlin in 2011 and his Ph.D. from TU Berlin in 2014. As a fellow of the European Post-Doctoral Institute for Mathematical Sciences he is currently staying at the Max Planck Institute for Mathematics in Bonn. Before, he visited the Institut des Hautes E´ tudes Scientifiques in Bures-sur-Yvette, the Isaac Newton Institute for Mathematical Sciences in Cambridge, and the Erwin Schrödinger International Institute for Mathematical Physics in Vienna. His research area is discrete differential geometry, in particular the theory of discrete Riemann surfaces.

Gabriele Guscetti is a civil engineer (EPFL) with a specialisation in structural engineering. He is also Founder Member and President of the Board at INGENI SA. Guscetti explores the use of different materials in the most original and innovative applications to achieve a conceptual and technical enhancement of the structure and thereby of the architectural project. He has carried out projects of different scales, from the smallest, most singular, to the largest, most impressive ones: Rolex buildings, Geneva, Langensand Bridge, Lucerne (Steel Award 2011), FIBA headquarters, Mies (Building Award 2015), Swiss Tech Convention Center, Lausanne, JTI headquarters, Geneva, and, the unique concept of a mobile footbridge to the Geneva Jet d'Eau.

Daniel Hambleton is the Director of MESH Consultants Inc., a Torontobased consulting firm that offers applied mathematics and development services to the digital design industry. He has worked extensively across a variety of markets, such as: architecture, product design, energy, software development, and engineering. Although his research is focussed on computational geometry and physics simulations, he has extensive experience with interdisciplinary projects and unique collaborations.

John Harding has studied and practiced as both an architect and engineer. He recently received his doctorate from The University of Bath in computational design, focussing on genetic programming for early-stage design exploration. His current research interests lie in structural form-finding, evolutionary computing, and machine-learning applications for design. He previously led the Ramboll Computational Design team in London before recently becoming Senior Lecturer in Architecture at the University of The West of England (UWE), UK.

Matthew Hayhurst studied Architecture at the University of Nottingham, graduating in 2007 with distinction. He was nominated for the RIBA President's Silver Medal. He joined Foster + Partners in 2007, working on a wide range of projects including The Sage Gateshead, Imperial College London, Corby Academy, and several international projects. He is currently the Lead Project Architect for the Edmond and Lily Safra Centre for Brain Sciences, which is currently under construction in Jerusalem and the mixed-use Royal Hamilius development in the heart of Luxembourg City. He is a visiting tutor and Lecturer at Nottingham and Birmingham City Universities.

Darron Haylock studied Architecture at De Montfort University, Leicester. He was made a Project Director at Foster + Partners in 2001 and a partner in 2004. He worked on the Thomas Deacon Academy project in Peterborough, which won the prestigious RIBA and Institution of Structural Engineer awards. More recently he worked as the Partner-in-Charge of Circle Hospitals, with sites at a variety of UK locations. He is also the Partner in Charge of Glebe Place, a high-end residential project in Chelsea, as well as being involved in several masterplan design competitions – in Beijing, Budapest, and Casablanca.

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Matthias Kohler is an architect with multi-disciplinary interests ranging from computational design and robotic fabrication to material innovation. In 2000, he founded the architecture practice Gramazio Kohler Architects in conjunction with his partner Fabio Gramazio, where numerous award-wining designs have been realised. By opening the world's first architectural robotic laboratory at ETH Zurich, their research has been formative in the field of digital architecture, merging computational design and additive fabrication through the customised use of industrial robots. Matthias Kohler's work has been widely published and internationally exhibited, and is comprehensively documented in the book "The Robotic Touch – How Robots Change Architecture". Since 2014, Matthias Kohler is also Director of the National Centre of Competence in Research (NCCR) Digital Fabrication.

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Oliver David Krieg is a Research Associate and doctoral candidate at the Institute for Computational Design (ICD). With the completion of his Diploma degree in 2012 he also received the faculty's Diploma Price. With a profound interest in computational design processes and digital fabrication in architecture, he participated in several award-winning and internationally published research projects. In the context of computational design his research aims to investigate the architectural potentials of robotic fabrication in wood construction.

Riccardo La Magna is a structural engineer and PhD candidate at the Institute of Building Structures and Structural Design (ITKE) of the University of Stuttgart. In his research he focusses on simulation technology, innovative structural systems, and new materials for building applications.

Bruno Léger is a structural engineer and Technical Director at Quille Construction, a subsidiary company of Bouygues Construction. He has taken part in the design and planning of complex projects, like the Velodrome Stadium in Marseille.

Morten Norman Lund was educated as an engineer at Aalborg University, specializing in architecture. He has been at GXN as an architect for 5 years, working mainly on research projects that focus on materials, sustainability, and digital technologies as well as architecture projects. He is currently leading GXN's latest research into digital fabrication though the Digital Factory project. His current work at 3XN and GXN serves to bring digital tools into the later phases of the design process to allow more complex designs to be conceived and built.

Tomás Méndez Echenagucia is a postdoctoral fellow at the Block Research Group (BRG) at ETH Zurich. He holds a double degree in Architecture from Universidad Central de Venezuela and Politecnico di Torino, where he also obtained a PhD in Architecture and Building Design. He was awarded the Hangai Prize by the International Association of Shell and Spatial Structures in 2008. He has worked as an architect and a consultant on computational design in Europe and South America. His research is focussed on multidisciplinary search and optimisation tools for the early stages of architectural design, including acoustic, structural and environmental design.

Romain Mesnil is a structural engineer with master's degrees from MIT and l'Ecole des Ponts et Chaussées. He is currently a PhD candidate funded by Bouygues Construction at l'Ecole des Ponts et Chaussées in Paris. His research goal is to provide intuitive methods for geometrical and structural rationalisation of free-form architecture.

Zachary Mollica is a Canadian architect and maker whose work explores the integration of innovative digital methods alongside traditional craft knowledge. Zac completed his undergraduate studies at Dalhousie School of Architecture, Canada and has since worked for a number of architecture and design practices in Amsterdam, Lunenburg, Toronto, and Vancouver. Completing the Architectural Association's Design + Make programme in Hooke Park over the past 2 years, Zac led the development of the Tree Fork Truss within the Wood Chip Barn student project.

Josef Musil is an associate at Foster + Partners in London, as part of the research Specialist Modelling Group and focusses on applied research, application of new technologies, and algorithmic design to complex architectural and geometrical

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challenges. He also specialises on the application of small robotics within the office. Josef studied as a Fulbright scholar at the University of Pennsylvania, where he received his MArch degree, and at the Czech Technical University. Josef is enthusiastic about bridging computer science or other sciences with architecture. Josef worked as a researcher or a tutor at UPenn, USC, UCL, and AA Visiting School.

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Paul Nicholas holds a PhD in Architecture from RMIT University, Melbourne, Australia. Having previously practiced with Arup Consulting Engineers from 2005 and AECOM/Edaw from 2009, Paul joined the Centre for Information Technology and Architecture (CITA), Copenhagen, Denmark, in 2011. Paul's particular interest is the development of innovative computational approaches that establish new bridges between design, structure, and materiality. His recent research explores sensor-enabled robotic fabrication, multi-scale modelling, and the idea that designed materials such as composites necessitate new relationships between material, representation, simulation and production.

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Mark Pauly is an associate professor at the School of Computer and Communication Sciences at EPFL. Prior to joining EPFL, he was assistant professor at the CS department of ETH Zurich since April 2005. From August 2003 to March 2005 he was a postdoctoral scholar at Stanford University, where he also held a position as visiting assistant professor during the summer of 2005. He received his Ph.D. degree (with distinction) in 2003 from ETH Zurich and his M.S. degree (with highest honors) in 1999 from TU Kaiserslautern. His research interests include computer graphics and animation, geometry processing, architectural geometry, shape modelling and analysis, and computational geometry. He received the ETH medal for outstanding dissertation and was awarded the Eurographics Young Researcher Award in 2006.

Mariana Popescu is a PhD researcher at the Block Research Group (BRG) and within the NCCR - Digital Fabrication at ETH Zurich. She holds a Bachelor and Master's degree in architecture from Delft University of Technology and has a strong interest in innovative ways of approaching the fabrication process and use of materials. Her current research focusses on knitted stay-in-place formwork for complex concrete structures. Previously, she was part of the start-up Hive Systems, developing a platform for complex interactive environments using distributed algorithms, and has been working as a parametric design specialist at Zwarts & Jansma Architects in Amsterdam.

Helmut Pottmann is Professor of Applied Geometry and Director of the Centre for Geometry and Computational Design at Vienna University of Technology. From 2009-2013, he was director of the Geometric Modelling and Scientific Visualisation Centre at King Abdullah University of Science and Technology. His research interests are in Applied Geometry and Visual Computing, in particular in Geometric Modelling, Geometry Processing and most recently in Geometric Computing for Architecture and Manufacturing. He has co-authored two books and more than 200 refereed articles.

Mette Ramsgaard Thomsen is a Professor and Head of Research Centre at the Centre for Information Technology and Architecture (CITA), Copenhagen, Denmark. Her research centres on the intersection between architecture and computer science. During the last 15 years her focus has been on the profound changes that digital technologies instigate in the way architecture is thought, designed and built. At CITA she piloted a special research focus on the new digital-material relations that digital technologies bring forth. By investigating advanced computer modelling, digital fabrication, and material specification, CITA has been central in the forming of an international research field examining the changes to material practice in architecture.

Gernot Riether is an Associate Professor at the College of Architecture and Design at the New Jersey Institute of Technology (NJIT), USA. In his Digital Design Build Studio he and his students develop and test new digital design and fabrication

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methods. Previous projects from this studio include the AIA Pavilion in New Orleans, the Nuit Blanche Pavilion in Paris, the MAINX24 Pavilion in Chattanooga, and Urban Blanket in Atlanta. Riether's research has been exhibited internationally and is featured in prominent publications such as Architectural Record and DETAIL. Riether's studio has been funded by the AIA, the Austrian government, non-profit organisations, the industry, and universities.

Matthias Rippmann has been a member of the Block Research Group (BRG) at ETH Zurich since 2010, where he received his doctorate. In 2015, he joined the National Centre of Competence in Research (NCCR) Digital Fabrication at ETH as a postdoctoral fellow. He conducts research in the field of structurally informed design and digital fabrication and is lead developer of the form-finding software RhinoVAULT. He studied architecture at the University of Stuttgart and the University of Melbourne. He worked in Stuttgart at Behnisch Architekten, LAVA, the Institute for Lightweight Structures and Conceptual Design, and Werner Sobek Engineers. In 2010, he co-founded the architecture and consultancy firm Rippmann Oesterle Knauss GmbH (ROK).

Christopher Robeller is an architect and postdoctoral researcher at the Timber Construction Laboratory IBOIS at EPFL Lausanne. Christopher received his architecture diploma with distinction from London Metropolitan University in 2008 and worked at ICD Stuttgart from 2008-2010, where he developed integral timber plate joints for the award-winning ICD/ITKE Research Pavilion 2010. Since 2011 he is working at IBOIS and received a doctoral degree from EPFL in 2015 for his thesis entitled Integral Mechanical Attachment for Timber Folded Plate Structures. His research was published in journals and conferences such as Bauingenieur, ACADIA, RobArch and AAG, where he received the Best Paper Award 2014.

Elissa Ross is a Senior Associate at MESH Consultants Inc. She holds a PhD in mathematics from York University (Toronto) where her research focussed on the rigidity and flexibility of periodic (repetitive) structures. She has additional expertise in computational geometry, graph theory, and tilings/patterns, and a long history of collaborative and interdisciplinary projects. At MESH Consultants Inc., Elissa conducts research in architectural geometry, adds to the breadth of the geometry consulting services, and develops inhouse tools for 3D geometry applications.

Romana Rust studied architecture at TU Graz, Austria. With the diploma thesis "Integration of Digital and Physical Design Methods", which was awarded at both the GAD Awards 2012 and archdiploma˜13, she completed her architectural studies in 2012 with distinction. Together with Kathrin Dörfler, she founded the architecture collective dorfundrust. Since 2013, she is a PhD researcher at Gramazio Kohler Research at ETH Zurich focussing on adaptive fabrication techniques and their integration with computational design frameworks that place materiality as an a priori agent in the formulation of architectural building elements.

Simon Schleicher is an Assistant Professor in the Department of Architecture at the University of California, Berkeley. His transdisciplinary work draws from architecture, engineering, and biology. By cross-disciplinary pooling of knowledge he aims to transfer bending and folding mechanisms found in nature to lightweight and responsive systems in architecture.

Joseph Schwartz obtained his Diploma in civil engineering from ETH Zurich in 1981 and his doctoral degree in 1989. His dissertation was awarded the ETH silver medal. From 2001 to 2008 he was professor at the Lucerne University of Applied Sciences and Arts. Since 2008 he is Full Professor of Structural Design at the Department of Architecture at ETH Zurich. He is co-author of "Design of Concrete Structures with Stress Fields" (1996) and "Mauerwerk" (1998). From 1991 to 2001 he was associate partner of a consulting office in Zug. Since 2002 he is owner of a civil engineering office in Zug.

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Martin Self is Director of Hooke Park and Programme Co-Director of the March Design + Make programme based at Hooke Park, the Architectural Association's Woodland Campus. Holding degrees in aerospace engineering and architecture theory, he worked as a consultant engineer at Ove Arup & Partners between 1996 and 2007, where he was a founding member of its Advanced Geometry Group. Projects at AGU included collaborations with architects including Alvaro Siza, OMA, UN-Studio, and Shigeru Ban, and artists Anish Kapoor and Chris Ofili. He has taught students in realising design-build projects at the Architectural Association since 2005.

Shen-Guan Shih is a Professor at Department of Architecture, National Taiwan University of Science and Technology, since 1994. He is interested in interdisciplinary research combining information science, architecture, and more. In recent years, he has participated in developing building-code checking systems for the Taipei city government. He also does research and teaching regarding generative modeling for building design.

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Asbjørn Søndergaard is an architectural researcher and technology entrepreneur working in the field of digital fabrication in its relation to architectural design. He is Chief Development Officer and co-founding partner of Odico Formwork Robotics, an advanced technology enterprise focussed on industrial scale development and application of architectural robotics. He is also a Ph.D. research fellow at Aarhus School of Architecture, and his ongoing doctoral research focusses on the coupling of structural optimisation with digital manufacturing. His work centres on the development of new manufacturing interfaces for the realisation of topology optimised architectural structures, explored through the fabrication of full-scale prototypes.

Dave Stasiuk is the Director of Applied Research at Proving Ground, a technology consultancy for architects, engineers, and manufacturers which focusses on the development of advanced computational tools that facilitate data-driven design and project collaboration. His academic research exists within the larger framework of CITA's "Complex Modelling" project, which investigates the digital infrastructures of design models and examines concerns of feedback and scale across the expanded digital design chain. His work concerns adaptive reparameterisation, focusing on the dynamic activation of data structures that allow for model networks to operate holistically as representational engines in the realisation of complex material assemblies.

Kasper Hornbak Steenstrup is a PhD student at the Department of Computer Science and Applied Mathematics, Technical University of Denmark. He received his Cand. Scient. degree (MSc) in computer science from the University of Copenhagen in 2013. His research focus is on geometry processing and numerical optimisation where he has public several paper adding architectural design.

Chengcheng Tang received his PhD in Applied Mathematics and Computational Sciences at King Abdullah University of Science and Technology (KAUST) in 2015, under the supervision of Professor Helmut Pottmann, after obtaining a corresponding master's degree in 2011. Before joining KAUST, he received his bachelor's degree in Materials Physics from Jilin University in 2009. Chengcheng is interested in applied geometry and computational design. He has published in venues like SIGGRAPH, ACM TOG, and AAG. He will join Stanford University as a postdoctoral scholar with Professor Leonidas Guibas in summer 2016.

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Tom Van Mele is Co-director of the Block Research Group (BRG) at ETH Zurich. He created and maintains the BRG computational framework, specifically focussing on the development of robust data structures and solvers for structural design and optimisation. He also manages BRG's web-based teaching and research platforms. His main research interests are geometry-based form-finding and analysis methods, three-dimensional collapse of masonry structures, and flexible formwork systems for concrete shell structures. In 2008, he received his PhD from the Department of Architectural Engineering at the Vrije Universiteit Brussel in Belgium.

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