PAPER PROCEEDINGS

Proceedings of the 39th Annual Conference of the Association for Computer Aided Design in Architecture

THE UNIVERSITY OF TEXAS AT AUSTIN
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The ACADIA Conference and its Proceedings and Project Catalog publications present an annual moment when the design community takes the pulse of computational design across research, academia, and practice. With a full paper double blind peer review process and an acceptance rate of under 30% for technical papers, ACADIA is one of the most selective conferences in the field. Beyond this, ACADIA also strives to lead in discourse around the present and future state of computational design and its surrounding culture(s). Each annual conference takes on a specific theme around which the membership is invited to engage in conversation, and inevitably, at each conference new discussions and debates come to the fore.

Last year, in 2018, we held the annual conference, Re/calibration: on imprecision and infidelity, in Mexico for the first time in ACADIA’s 38-year history. This was significant for not only opening up ACADIA to a broader international community, but also for the charge put forward by the conference chairs to rethink computational design relative to broader discourses of craft, labor, and social impact. The article by Viola Ago in The Architect’s Newspaper makes an insightful summary of the significance of conference location and the conversations that it aimed to provoke: “The cultural implications of holding the conference in Mexico City were best explained by keynote speaker and professor at the Universidad Iberoamericana CDMX and principal at Estudio MMX, Diego Ricalde’s analysis punitively titled PPP (Prejudice, Paradox, Pragmatism). Ricalde speculated that Mexico’s architectural culture is at a moment where the unproductive division of old world single-vision, analog thinking, and new world “digital hysteria” needs to come to an end. Ricalde’s call for action can be read as a parallel to this year’s ACADIA theme “Recalibration: On Imprecision and Infidelity”. The theme encouraged participants to rethink a machine-driven infatuation with nano-centric precision, and recover other avenues of thinking and making.”

The 2019 conference, Ubiquity and Autonomy, promises a no less provocative conversation around the pervasiveness of connected digital platforms and algorithmic processes on the one hand—when it actually takes considerable effort to not engage computational technologies in almost every aspect of design than to do so—and the seeming retrenchment of architectural factions into disciplinary autonomy focused on aesthetics, representation, and theory on the other. We look forward to seeing how this conversation will evolve in the discussion sessions and presentations. Another topic anticipated to be part of the discussions this year will surely be the speed with which relatively recent technologies such as AR/VR/MR, generative design, and machine learning are being rapidly adopted within the industry and profession, as well as in extra-disciplinary fields, and perhaps faster than the advancements in fabrication and advanced manufacturing. This year’s conference is remarkable in the presence of professional firms who are leading in both computational design and leading edge constructed projects worldwide, and this is particularly evidenced in the selections for Keynotes and Workshops that have been curated by the Conference Chairs. If one of ACADIA’s goals is to bridge gaps between academia and practice, Ubiquity and Autonomy is certainly poised to make steps toward that aim.

On behalf of the ACADIA membership and the Board, I would like to thank the 2019 Conference Chairs, Kory Bieg, Danelle Briscoe, and Clay Odom for the incredible work they have done to conceive of, plan, and execute the Annual Conference and the associated Peer Review Process and Publications, as well as Benjamin Rice for his work on the Workshop organization. I would also like to extend many thanks to Dean Michelle Addington hosting ACADIA at the The UT Austin School of Architecture, and to the staff and students who have worked behind the scenes to make the conference and workshops a success.
This year was also significant for ACADIA, as we went a long way in increasing the organization’s inclusiveness, professionalism, and transparency. Over the past year, the ACADIA Board has developed and adopted two important policies that affirm our core beliefs as an organization: the Publication Ethics Guidelines and the ACADIA Code of Conduct. The Publication Ethics provides our guidelines for standards and best practices in peer review publication for authors, reviewers, and technical chairs. This will help ensure that ACADIA maintains the highest standards in academic publication, and reinforces the organization’s commitment to transparency and integrity throughout the process. The Code of Conduct is a set of expectations for behavior that we expect at all ACADIA sponsored activities, including conferences, workshops, Board meetings, and social media interactions. One way to increase the diversity and inclusiveness of an organization or society is to establish expectations for inclusive and welcoming behavior and interactions, and the Code of Conduct will help us to ensure that all ACADIA activities and events are safe, professional, and inclusive spaces, and encourages respectful dialogue among ACADIA participants and members. I would particularly like to acknowledge the members of the ACADIA Scientific Committee who did significant work in developing these documents: Andrew John Wit, Lauren Vasey, Christoph Klemmt, Phillip Anzalone, Tsz Yan Ng, and Skylar Tibbits.

I would also like to acknowledge and thank the dedicated members of the ACADIA Board and Officers, who volunteer countless hours to helping the organization and the annual conference to run smoothly. In particular the leadership and contributions of Vice President Jason Kelly Johnson, Treasurer Mike Christensen, Communications Officer Adam Marcus, and Development Officer Alvin Huang have been invaluable. I would also like to extend my gratitude to ACADIA’s sponsors, who not only provide financial support, helping to ensure that the annual conference is a high quality event, but are also active members of the ACADIA community and its activities. In particular, the continued scholarship sponsorship by Autodesk, now in its fourth year, has enabled us to provide travel scholarships for accepted students to travel to present at the conference, and to support the work of emerging researchers. In 2018 ACADIA additionally supported 24 students from Mexico City with reduced local rates so that they were able to afford to attend the conference. This year we are working with our sponsors and local institutions to continue this relationship and exchange. Each year we struggle to maintain affordable conference ticket rates, especially for students and recent graduates, against the very real costs of hosting such an event. The annual conference would not be possible without incredible amounts of volunteer time from the Conference Chairs and the Board, significant in-kind support from the host institution, and the financial support of our sponsors. One of our goals for the coming year will be to make content from ACADIA’s conferences more accessible to the public through our website. I look forward to the ways that ACADIA and its members will continue to lead as the computational design field matures and transforms in the future.

Notes:
The telegraph was one of the first technological breakthroughs to turn physical objects into digital bits. This transformation necessitated the construction of a large-scale, infrastructural network of wires to relay this new form of information. The implications were so profound that critics warned of an advancing technology “annihilating time and space.” Through its aggressive nature, the digital world was for the first time altering the very constants by which we had for centuries understood and defined the analog world. That was almost 200 years ago. The late 1950s again saw a boom in development spurred by the race to reach the moon. In fact, the first digital interface, the DSKY, was developed specifically for the Apollo Program by Charles Draper and his team from MIT. Digital interfaces then found their way into use by everyday people around the world. A few years later, Gordon Moore made a bold prediction that has since dominated much of the speculation regarding computation. Moore stated that the number of transistors on a microchip would double every two years—this exponential doubling of computer speed came to be known as Moore’s Law. After years of Moore’s prediction proving true there is growing consensus that, barring breakthroughs in quantum computing, such growth will end within the decade. Despite a leveling of computational speed, access to that speed has become ubiquitous, giving way to a different form of computational economy that is digital by its very nature (block Chain, Big Data, AR/VR, AI, etc.). Powerful computers now impact almost every aspect of our lives, and as Keller Easterling notes, “non-human, inanimate objects possess agency and activity” in a way that is unprecedented. We find ourselves at a moment where there is no longer a divide between analog and digital processes; the digital world is as ubiquitous and inescapable as the material, and has, in many ways, replaced it.

The counterpart of ubiquity is autonomy. As technology continues to proliferate and embed itself into the world, becoming increasingly ubiquitous and available to the masses, new forms of autonomy are emerging. In 1990, the World Wide Web was launched. For the past 30 years, we have been engrossed in a shared network culture and absorbed in a universe of information. In some ways, the web has liberated us. We are no longer dependent on large corporate conglomerates. The market has been dispersed, and we have much more freedom to choose with whom we do business. As Alec Ross, the Senior Advisor for Innovation in the State Department under President Obama, noted, “With coded markets available to even the smallest vendors, a trend has arisen that pushes economic transactions away from physical stores or hotels and toward individual people, as they connect either locally or online.” Instead of reinforcing the smooth and unobstructed projection of existing modes of operation, ubiquitous access to the web has allowed for new niche communities to emerge, communities that are in some ways highly specialized and capable of achieving discrete, sole source transactions in a way that would be impossible for any large company. Such diffusion and proliferation is, in itself, a form of ubiquity. As we have seen time and time again, when individuals gain access to technology or companies innovate small markets from within, they eventually either redefine existing industries or form new ones.

In many ways, the state of ubiquity and the spark of autonomy chart the rise and fall of companies, industries, and technology. The history of American Online (AOL) for example, is one that began with growth. AOL started as a small online host for multi-player games, and eventually acquired Netscape as its online internet platform. Its ubiquity invited competition and soon rivals fought for their share of market space. The AOL merger with Time Warner was the largest in history at the time until AOL split with Time Warner, in an attempt to regain its prior status as an independent industry giant. Instead, AOL gradually declined in the wake of other companies that had grown autonomously and claimed their own foothold in a rapidly changing marketplace.
In architecture, we are seeing a similar transition from the ubiquitous use of tools and techniques to more autonomous modes of production. Since the 1990s, the ‘digital’ in architecture has spread through academia and the profession. The digital has become completely ubiquitous; one would be hard-pressed to find an office or school not using computers or emerging technologies. Now that total acceptance of and access to technology has arrived, it is time to question these tools anew and look for other ways to innovate from within. In his essay, Software Monocultures, Mark Foster Gage warns against uniformity of any kind. Gage advises us to heed the lesson learned from the great Potato Famine—a devastating event attributed to reliance on the uniformity of potato genetics, allowing a single disease to wipe out entire crops. Our dependence on single software platforms for the design of buildings has produced a similar “monoculture” laden with the same dangers and pitfalls that befell those who relied on a single breed potato. Gage is not alone. The discourse of architecture has been drifting toward theories and practices of a more autonomous nature, whereby practices leverage access to digital tools and techniques to develop approaches which often favor articulation and separation.

In the paper and project proceedings from this year’s ACADIA Conference, we see a resistance to the familiar use of ubiquitous technologies and a search for autonomy within the expanding reach of our discipline. This extension has multiplied the range of topics that are within these pages and re-energized familiar terrain. The ubiquitous technologies of CNC fabrication, 3d printing, and even robotic manufacture have matured over the past decade, but we have also seen an increase in the fear that automation will soon replace skilled labor. Some of the work in this book directly responds to that fear, searching for new ways in which to use technology to promote design and fabrication while continuing to engage the unique capacity of humans to create. We are starting to search for alternative ways to incorporate digital technologies into architecture—not to displace the analog with digital, but to deliver autonomy back in the hands of individuals. As Ross notes, “robots can be a boon, freeing up humans to do more productive things—but only as long as humans create the systems to adapt their workforces, economies, and societies to the inevitable disruption.” The overlap of previously disconnected technologies is partly responsible for this exciting development.

This year, we saw an increase in areas of research using Augmented Reality (AR) and Virtual Reality (VR) in relation to Robotics, and these explorations introduce new questions about our place in a digitally constructed world. Both AR and VR displace the individual into a completely accessible and ubiquitous other; a point made by some of the more theoretical papers. In many ways, our avatars are not extensions of our self, but objects that exist outside the subject through which to engage other objects that may be virtual, material, or just as likely, digital and physical hybrids. In this realm, alternative forms of autonomy must emerge in order for progress to continue. As Elon Musk has noted, “Over time I think we will probably see a closer merger of biological intelligence and digital intelligence...” As the agency of our bodies is replaced by more efficient machines, we should understand how our creative thoughts and actions might not only survive, but thrive in this new domain. While Artificial Intelligence (AI) can think faster and sift through information more accurately, it processes information differently. AI does not replace our minds, but, as we have seen with the advance of human-robot collaborations, it is an opportunity for expanding human intelligence and creativity. AI fosters autonomy and as Bruce Sterling famously stated, “Autonomy is independence.”

So what is next? If the last decade was about the advance of architectural technology into unified and specialized areas of research, the next decade might bring about the expansion of that same research into new fields, new territories, and other disciplines. If the papers from this year’s conference are bellwethers for the next phase in computational design, we will see an even greater increase in overlapping technologies and a further fracturing of the mainstream use of well-worn digital tools. As Adam Greenfield notes in his book Radical Technologies, “The truly transformative circumstances will arise not from any one
technology standing alone, but from multiple technical capabilities woven together in combination. This mutual exchange, this coupling between ubiquity and autonomy, will fuel innovation and continue to progress.

Ubiquity not only promotes autonomy; it is the reason for it. After all, the vast infrastructure of telephone lines is mostly unnecessary now that cell phones have become the favored form of universal access to a communication regime that began with the telegraph. The new localized (cellular) and distributed access of mobile phones has, in a strange way, facilitated an autonomy that goes well beyond what a hard wired phone network could ever achieve. The cyclical revolution between ubiquity and autonomy will continue and opportunities to advance the field will remain. Ubiquitous access to technology could and sometimes does point to irrelevance or even loss of entire sectors. However, such access also heralds new potential for developing the disciplinary expertise and autonomy required to maximize ubiquity’s impact. ACADIA represents a collective of researchers at the forefront of our discipline’s investment in digital technology and computational design and it will be exciting to see how this community answers this call and propels the next revolution of autonomous innovation in response to and in spite of society’s universal adoption of technology.

NOTES:


5 Ross, 37.


8 Greenfield, 273.
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Kory Bieg is an Associate Professor of Architecture at the University of Texas at Austin. He received his Master of Architecture from Columbia University and is a registered architect in the states of California and Texas. Since 2013, he has served as Chair of the TxA Emerging Design + Technology conference, and co-Director of TEX-FAB Digital Fabrication Alliance. He has served on the Board of SXSW Eco Place by Design and the Association for Computer Aided Design in Architecture.

In 2005, Kory Bieg founded OTA+, an architecture, design, and research office that specializes in the development and use of current, new, and emerging digital technologies for the design and fabrication of buildings, building components, and experimental installations. OTA+ uses current design software and CNC machine tools to both generate and construct conceptually rigorous and formally unique design proposals.

Danelle Briscoe received her Master of Architecture degree from Yale University where she was awarded the Eero Saarinen Design Excellence Award. Her Bachelor of Architecture degree is from the University of Texas at Austin with Honors. Her ten years of work experience includes being a designer at Frank Gehry Partners, LLP, designer at Marmol+Radziner LLP (both in Los Angeles) and UT residency at Centerbrook Architects (in Connecticut).

In 2016, Danelle completed her book titled Architecture Information Modelling. Danelle has served on the Board of Directors for ACADIA and also on the Editorial Board for the International Journal of Architectural Computation (IJAC).

Clay Odom founded the design practice of StudioMODO in 2009 to develop design, branding, conceptual art, and furniture projects and research.

Clay is an Associate Professor at The University of Texas School of Architecture. His research involves inquiry into the generation and manipulation of a range of subjective spatial, contextual, experiential, and para-cinematic outcomes - such as atmosphere, sublimity, and delight, which emerge through objective, effective processes of design, fabrication, and installation.
CLOSING PANEL

Michelle Addington is dean of The University of Texas at Austin School of Architecture, where she holds the Henry M. Rockwell Chair in Architecture. Formerly, she served as Gerald Hines Chair in Sustainable Architectural Design at the Yale University School of Architecture and was jointly appointed as a Professor at the Yale University School of Forestry and Environmental Studies. Prior to teaching at Yale, she taught at the Harvard University Graduate School of Design, the Technical University of Munich, Temple University and Philadelphia University.

Ian Bogost is the Ivan Allen College Distinguished Chair in Media Studies and Professor of Interactive Computing at the Georgia Institute of Technology, where he also holds appointments in the Scheller College of Business and the School of Architecture. He is a Founding Partner at Persuasive Games LLC, an independent game studio, and a Contributing Editor at The Atlantic. The author or co-author of ten books, Bogost’s latest is Play Anything.

Marcelyn Gow is principal of servo los angeles, a design collaborative invested in the development of architectural environments integrating synthetic ecologies with shifting material states. servo’s work has been exhibited at the Venice Architecture Biennale, the Centre Pompidou, Archilab, Artists Space, the SCI-Arc Gallery, the MAK Center for Art and Architecture, the Storefront for Art and Architecture and the San Francisco Museum of Modern Art (SFMoMA) and is in the permanent collections of SFMoMA and the FRAC Centre. Gow received her Architecture degrees from the Architectural Association and Columbia University, as well as a Dr.Sc. from the ETH Zurich. Her doctoral dissertation Invisible Environment: Art, Architecture and a Systems Aesthetic explores the relationship between aesthetic research and technological innovation. Gow is currently the Coordinator of SCI-Arc’s M.S. Design Theory & Pedagogy postgraduate program and she teaches design studios and history and theory seminars at SCI-Arc.

Neil Leach teaches at Tongji University, FIU and the EGS, and has also taught at the AA, Harvard GSD, Columbia GSAPP, Cornell, SCI-Arc and USC. He is an academician in the Academy of Europe, and is the recipient of two NASA Innovative Advanced Concepts fellowships to fund research into developing 3D print technologies for the Moon and Mars. He has published 40 books including: Designing for a Digital World (Wiley, 2002), Digital Tectonics (Wiley, 2004), Digital Cities (Wiley, 2009), Machinic Processes (CABP, 2010), Robotic Futures (Tongji UP, 2015), Swarm Intelligence (Tongji UP, 2017), Computational Design (Tongji UP, 2017), Digital Fabrication (Tongji UP, 2017) and 3D Printed Body Architecture (Wiley, 2017).

Kathy Velikov is an Architect, Associate Professor at University of Michigan’s Taubman College, and current President of ACADIA. She is founding partner of the research-based practice rvtr, which serves as a platform for exploration and experimentation in the intertwinements between architecture, the environment, technology, and sociopolitics. She is a recipient of the Architectural League’s Young Architects Award and the Canadian Professional Prix de Rome in Architecture. Her work has received numerous awards and has been published and exhibited internationally. Kathy is co-author of Infra Eco Logi Urbanism (Park Books, 2015) and is currently working on a new book, Ambiguous Territory: Architecture, Landscape and the Postnatural (Actar, 2020).
SESSION CHAIRS

Daniel Koehler is a city-architect, and co-founder of lab-eds. He is an assistant professor for architecture computation in the School of Architecture at The University of Texas at Austin. Before, Daniel taught in the BPro-program at the Bartlett School of Architecture in London, and was a postdoctoral research fellow at Innsbruck University. Daniel has studied Architecture at the University of Applied Arts in Vienna, and he completed his PhD at Innsbruck University. His work has been exhibited in Prague, Milan, Graz, Montreal, London, and is part of the permanent collection of the Centre Pompidou. He is the author of “The Mereological City”, a study on the part-relationships between architecture and its city in the modern period. His current research focuses on the urban implications of distributive technologies.

Aleksandra Jaeschke is an Assistant Professor of Architecture and Sustainable Design at the University of Texas at Austin. A graduate of the Architectural Association in London (AA Diploma 2005), she holds a doctorate from Harvard GSD (Doctor of Design, 2018), and is a licensed architect in Italy where she practiced at AION, an architectural firm she co-founded and co-directed until her move to the U.S. In 2013, AION held a solo exhibition Eco-Machines in the Wroclaw Museum of Architecture in Poland. In recognition of the work developed by the studio, she received the Europe 40 Under 40 Award for 2011. Jaeschke’s current interests range from mainstream discourses on sustainability and broader notions of ecology, to cross-scalar integrative design strategies and the role of architects in transdisciplinary projects. She is the 2019 Wheelwright Prize winner.

Alvin Huang, AIA, NOMA is a Los Angeles based architect with a global profile. He is an award-winning architect, designer, and educator specializing in the integrated application of material performance, emergent design technologies and digital fabrication in contemporary architectural practice. His work spans all scales ranging from hi-rise towers and mixed-use developments to temporary pavilions and bespoke furnishings.

His design work has been published and exhibited widely and has gained international recognition with over 40 distinctions at local, national, and international levels including being selected as one of 50 global innovators under the age of 50 by Images Publishing in 2015, being featured as a “Next Progressive” by Architect Magazine in 2014, and being named one of Time Magazine’s 25 Best Inventors of 2013.

Adam Marcus is an Associate Professor of Architecture at California College of the Arts in San Francisco, where he teaches design studios in design computation and digital fabrication and co-directs CCA’s Architectural Ecologies Lab. He has previously taught at Columbia University, the University of Minnesota, and the Architectural Association’s Visiting School Los Angeles. He directs Variable Projects, an award-winning design and research studio in Oakland, California, and he is a partner in Futures North, a public art collaborative dedicated to exploring the aesthetics of data. Adam is a graduate of Brown University and Columbia University’s Graduate School of Architecture, Planning and Preservation, and he currently serves on the Board of Directors for the Association for Computer-Aided Design in Architecture (ACADIA).
**Tsz Yan Ng** is an Assistant Professor at Taubman College, University of Michigan. Her material-based research and design primarily focus on experimental concrete forming (hard) and textile manipulation (soft), often times in direct exchange and incorporating contemporary technologies to develop novel designs for building and manufacturing. A common thread to her work investigates questions of labor in various facets and forms – underscoring broader issues of industrial manufacturing innovation, of human labor, crafting, and aesthetics. She’s the principal of an independent architecture and art practice with built works in the US and China. Her practice, collaborative in nature and interdisciplinary in scope, ranges in scale from textile manufacturing facilities to commercial retail interiors and installations. Ng joined Taubman College as the Walter B. Sanders Fellow (2007-08) and was also the Reyner Banham Fellow at the University of Buffalo from 2001-2002.

**Behnaz Farahi** is a designer and creative technologist based in Los Angeles working at the intersection of fashion, architecture and interactive design. Trained as an architect and specializing in physical computing and 3D printing, her ultimate goal is to enhance the relationship between human beings and their environment by following morphological and behavioral principles inspired by natural systems.

Behnaz is a recipient of a number of prestigious awards including the 2016 World Technology Design Award and the 2016 Innovation By Design Fast Company Design Award. She is currently an Annenberg Fellow and is completing her PhD in Interdisciplinary Media Arts and Practice at the USC School of Cinematic Arts.

**Gabriel Esquivel** was born and educated as an architect in Mexico City with a degree from the National University and received his Master’s Degree in Architecture from The Ohio State University. He previously taught Architecture and Design at the Knowlton School of Architecture and the Design Department Ohio State University.

After joining the architecture faculty at Texas A&M University, he has investigated the benefits and vehicles of a heterogeneous model that integrates both technology and architecture’s proprietary devices. Gabriel began to explore different possibilities of research through fabrication in partnership with the Department of Aerospace Engineering, specifically on the relationship of composite and SMA materials with architectural automated surfaces. Gabriel is the director of the T4T Lab at Texas A&M University where he examines the integration of digital technology to exchange architectural information and its connection to contemporary theory.

**Jason Kelly Johnson** is lead artist and founding design partner of FUTUREFORMS. He brings to the team an expertise in computational design and advanced digital fabrication, through the lens of critical art production and interactive technologies. Jason [b.1973] was born and raised in Canada. He received a Bachelor of Science from the University of Virginia, and a Masters of Architecture from Princeton University. Johnson is currently an Associate Professor at the CCA in San Francisco, CA.
Güvenç Özel is an architect, artist and technologist. He is a Suprastudio Lead at UCLA A.UD IDEAS Program, and the principal of Özel Office. His work is at the intersection of architecture, technology and media. His projects and experimental installations were exhibited in museums and galleries in the USA and Europe, including Istanbul Museum of Modern Art and The Saatchi Gallery in London. His recent design and research on 3D printing was awarded one of the top prizes at NASA's 3D Printed Habitats Competition. His latest installation Cypher was sponsored by Google’s Artists and Machine Intelligence Program and debuted at SXSW. At UCLA IDEAS, his masters design studio research focuses on virtual reality, machine learning/ AI, robotics and sensing interfaces with support from leading companies such as Autodesk, Microsoft, Oculus and others.

Ersela Kripa is an Assistant Professor at Texas Tech College of Architecture, a registered architect, and founding partner of AGENCY, an architectural research, design, and advocacy practice established in New York City in 2010 with Stephen Mueller. Born and raised under communist dictatorship in Albania, Ersela’s work is particularly focused on uncovering the machinations of the securocratic regimes that surveil and control public lives. She uses data as agency in marginalized urban environments by operating where hacker culture meets the city, cataloguing, analyzing, and co-opting ways in which citizens intersect with urban systems.

Ersela is recipient of the 2010-2011 Rome Prize in Architecture, the 2018 Emerging Voices Award from the Architectural League of New York, two MacDowell Colony fellowships, and the New York Foundation for the Arts fellowship. Ersela’s work has been exhibited at the 12th Architectural Venice Biennale, the Hong-Kong Shenzhen Urbanism Biennale, Storefront for Art and Architecture, among others.

Ian Bogost is the Ivan Allen College Distinguished Chair in Media Studies and Professor of Interactive Computing at the Georgia Institute of Technology, where he also holds appointments in the Scheller College of Business and the School of Architecture. He is a Founding Partner at Persuasive Games LLC, an independent game studio, and a Contributing Editor at The Atlantic. The author or co-author of ten books, Bogost’s latest is Play Anything.

Matias del Campo is a registered architect, designer and educator. Founded together with Sandra Manninger in Vienna 2003, SPAN is a globally acting practice best known for their application of contemporary technologies in architectural production. Their award-winning architectural designs are informed by advanced geometry, computational methodologies, and philosophical inquiry. This frame of considerations is described by SPAN as a design ecology. Most recently Matias del Campo was awarded the Accelerate@CERN fellowship, the AIA Studio Prize and was elected into the boards of directors of ACADIA. He guest edited an edition of AD, Architectural Design. SPAN’s work is in the permanent collection of the FRAC, the MAK in Vienna, the Benetton Collection, and the Albertina. He is Associate Professor at Taubman College for Architecture and Urban Planning, University of Michigan.
Virginia San Fratello draws, builds, 3D prints, teaches, and writes about architecture as a cultural endeavor deeply influenced by craft traditions and contemporary technologies. She is a founding partner in the Oakland based make-tank Emerging Objects. Wired magazine writes of her innovations, “while others busy themselves trying to prove that it’s possible to 3-D print a house, Rael and San Fratello are occupied with trying to design one people would actually want to live in”. She also speculates about the social agency of architecture, particularly along the borderlands between the USA and Mexico, in her studio RAEL SAN FRATELLO. You can see her drawings, models, and objects in the permanent collections of the Museum of Modern Art, the Cooper Hewitt Smithsonian Design Museum, and the San Francisco Museum of Modern Art.

Uli Dangel is an Associate Professor and Program Director for Architecture at The University of Texas at Austin where he teaches courses in design, construction, architectural detailing, and structural design. He received a Diploma in Architecture from Universität Stuttgart and a Master of Architecture from the University of Oregon. His professional career led him to London where he worked for internationally renowned architecture firms Foster and Partners as well as Grimshaw. He is a registered architect in Germany, the United Kingdom, and Texas.

Uli Dangel’s research and teaching focus on the use of wood in construction, its influence on building culture and craft, and how it contributes to the advancement of sustainable practices at the scale of local and global economies. Birkhäuser Basel published his books Sustainable Architecture in Vorarlberg: Energy Concepts and Construction Systems and Turning Point in Timber Construction: A New Economy in 2010 and 2017 respectively.

Dana Cupkova is a Co-founder and a Design Director of EPIPHYTE Lab, an interdisciplinary architectural design and research collaborative. She holds an Associate Professorship at Carnegie Mellon University’s School of Architecture and serves as the Track Chair for the Master of Science in Sustainable Design program. She was a member of the ACADIA Board of Directors from 2014 to 2018, and currently serves on the Editorial Board of The International Journal of Architectural Computing (IJAC). Dana’s work positions the built environment at the intersection of ecology, computational processes, and systems analysis. In her teaching and research, she interrogates the relationship between design-space and ecology as it engages computational methods, thermodynamic processes, and experimentation with geometrically-driven performance logics. In May 2018 Epiphyte Lab received the Next Progressives design practice award by ARCHITECT Magazine, The Journal of The American Institute of Architects.
The Association for Computer Aided Design in Architecture (ACADIA) is an international network of digital design researchers and professionals that facilitates critical investigations into the role of computation in architecture, planning, and building science, encouraging innovation in design creativity, sustainability and education.

ACADIA was founded in 1981 by some of the pioneers in the field of design computation including Bill Mitchell, Chuck Eastman, and Chris Yessios. Since then, ACADIA has hosted over 30 conferences across North America and has grown into a strong network of academics and professionals in the design computation field.

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2019
We find ourselves at a moment where there is no longer a divide between analog and digital processes; the digital world is as ubiquitous and inescapable as the material, and has, in many ways, replaced it. The counterpart of ubiquity is autonomy. As technology continues to proliferate and embed itself into the world, becoming increasingly ubiquitous and available to the masses, new forms of autonomy are emerging. In architecture, we are seeing a similar transition from the ubiquitous use of tools and techniques to more autonomous modes of production.

In the paper and project proceedings from this year’s ACADIA Conference, we see a resistance to the familiar use of ubiquitous technologies and a search for autonomy within the expanding reach of our discipline. This extension has multiplied the range of topics that are within these pages and re-energized familiar terrain. We are starting to search for alternative ways to incorporate digital technologies into architecture—not to displace the analog with digital, but to deliver autonomy back in the hands of individuals.

If the last decade was about the advance of architectural technology into unified and specialized areas of research, the next decade might bring about the expansion of that same research into new fields, new territories, and other disciplines. If the papers from this year’s conference are bellwethers for the next phase in computational design, we will see an even greater increase in overlapping technologies and a further fracturing of the mainstream use of well-worn digital tools. This mutual exchange, this coupling between ubiquity and autonomy, will fuel innovation and continue to progress.