



MIT's Center for Art Science & Technology (CAST) Presents Symposium Exploring Contemporary Convergences of Digital and Material Worlds

Taking place at MIT on April 21 – 22, 2017, BEING MATERIAL will draw leading artists, scientists, engineers, and scholars from around the world to explore the future of programmable materials, 3D/4D printing, synthetic biology, and wearable technologies

Cambridge, MA, January 25, 2017 — Massachusetts Institute of Technology (MIT) announces the second major symposium mounted by its Center for Art, Science & Technology (CAST), “[BEING MATERIAL](#).” Through conversations among artists and designers including Trevor Paglen, Hussein Chalayan, Claire Pentecost, and Lucy McRae, alongside leading scientists, engineers, and international scholars, such as Manu Prakash, Professor of Bioengineering from Stanford University, George Barbastathis, Professor of Mechanical Engineering at MIT, and Christina Agapakis, “BEING MATERIAL” will explore the unexpected intersections of the digital and material worlds. Building on MIT Media Lab founder Nicholas Negroponte’s 1995 prediction that the rise of the digital would rapidly untether us from material constraints, the symposium will grapple with the persistence of materiality and showcase how the material and the digital have continued to converge and foster innovations in material systems and design. These technological and engineering developments will be contextualized with input from artists and scholars from a range of humanities disciplines, advancing CAST’s mission to create opportunities for art, science, and technology to thrive as interrelated modes of exploration, knowledge, and discovery.

Chaired by [Stefan Helmreich](#) (Elting E. Morison Professor of Anthropology and Program Head); [Leila W. Kinney](#) (Executive Director of Arts Initiatives and MIT CAST); [Skylar Tibbits](#) (Assistant Professor and founder of the Self-Assembly Lab, Department of Architecture); [Rebecca Uchill](#) (Postdoctoral Fellow and Lecturer, Department of Architecture); and [Evan Ziporyn](#) (Kenan Sahin Distinguished Professor; Chair, Music and Theater Arts; and Faculty Director of MIT CAST); “BEING MATERIAL” will take place over two days, April 21 – 22, 2017, and will encompass four panels at the MIT Samberg Center and a concert in Kresge Auditorium. Each panel will be dedicated to a realm of digital and material intersections including the Programmable, Wearable, Livable, and Invisible, with a concluding concert—Audible. Symposium and concert registration are open to the public on the event website <http://arts.mit.edu/events-visit/symposia/being-material/>.

“If over the past half-century, we have experienced a software and hardware revolution, we are now experiencing a true materials revolution,” said Skylar Tibbits, Assistant Professor and founder of the Self-Assembly Lab, MIT Department of Architecture. “We can now sense, compute, and actuate with materials alone, just as we could with software and hardware platforms previously. BEING MATERIAL will draw thought-leaders and practitioners from across these diverse domains to MIT to share their innovations

with the public and with one another— with the aim of inspiring future discoveries and new pursuits in material systems and design.”

“BEING MATERIAL” follows CAST’s inaugural symposium, “Seeing / Sounding / Sensing,” which took place in September 2014 and invited artists to join with philosophers, cognitive neuroscientists, anthropologists, and historians to participate in open-ended discussions about knowledge production, resulting in the publication [*Experience: Culture, Cognition, and the Common Sense*](#), edited by Caroline A. Jones, David Mather, and Rebecca Uchill, distributed by The MIT Press (2016). “BEING MATERIAL” also follows the Active Matter Summit, a conference held at MIT in April 2015 and organized by MIT’s Self-Assembly Lab in collaboration with MIT’s Center for Art Science & Technology (CAST), MIT’s Department of Architecture, as well as Autodesk Inc. and Steelcase Inc. Leading researchers from the fields of materials science, art, design, engineering, synthetic biology, and soft-robotics along with thought leaders from government, public institutions, and industry collectively defined and explored challenges, applications and future scenarios in the emerging field of programmable materials. A forthcoming publication, *Active Matter* will be published by The MIT Press (Fall 2017).

Select participants include Manu Prakash, the recent MacArthur winner known for his Foldscope, a 50-cent microscope that unfolds like origami, and “paperfuge,” a 20-cent blood centrifuge; Hussein Chalayan, whose fashion designs have integrated new technology, science, and architecture for more than two decades; Lucy McRae, a sci-fi artist who probes the adaptability of the human body in extreme conditions; Trevor Paglen, a sound/video/installation artist, writer, and cultural geographer whose current work explores machine vision and surveillance; and Claire Pentecost, an artist who examines the implications of industrial and bioengineered agriculture. The event closes with a concert featuring a collaboration with cellist and CAST Mellon Distinguished Visiting Artist Maya Beiser, the electronic duo Grace & Max, Tibbits, and Ziporyn that will include a tribute to the late composer Pauline Oliveros.

The broad spectrum of “BEING MATERIAL” participants include:

- PROGRAMMABLE:
 - Benjamin Bratton, Ben Fry, Nadya Peek, Manu Prakash, Casey Reas
- WEARABLE:
 - Christina Agapakis, Hussein Chalayan, Michelle Finamore, Lucy McRae, Natasha Schull
- LIVABLE:
 - Tal Danino, Bill Maurer, Claire Pentecost, Bettina Stoetzer
- INVISIBLE:
 - Sandy Alexandre, George Barbastathis, Michelle Murphy, Trevor Paglen, Lisa Parks
- AUDIBLE (concert):
 - Maya Beiser, Grace Leslie & Max Citron, Evan Ziporyn

Additional details about each thematic panel and their respective participants and subject follow below.

SYMPOSIUM SCHEDULE AND DETAILS

ABOUT THE SYMPOSIUM

April 21 – 22, 2017

Friday, April 21, 2017

1:00 – 3:00pm: Programmable

3:00 – 3:30pm: Break

3:30 – 5:30pm: Wearable

Saturday, April 22, 2017

10:00am – 12:00pm: Livable

12:00 – 1:30pm: Lunch

1:30 – 3:30pm: Invisible

Followed by a reception

8:00pm: Audible, A Concert

MIT Samberg Conference Center, [Building E52](#)
50 Memorial Drive, Cambridge, MA 02139 USA

Registration, details, and livestream: <http://arts.mit.edu/events-visit/symposia/being-material/>

PROGRAMMABLE

Friday, April 21, 2017, 1:00 – 3:00pm

To program something is to impart a set of executable instructions into a medium to perform that process. From Ada Lovelace's first handwritten program to today's algorithmically animated robots, clothing, and living material, programmability has expanded its purview to embrace everything from the digital to the physical, from the synthetic to the biological, and from the scientific to the artistic. This panel will address questions such as: how have ideas about creativity, craft, and matter transformed in the process? What novel science and art emerge when material becomes programmable?

Participants

Introduction	Skylar Tibbits
Moderator	Kevin Slavin , Assistant Professor at MIT Media Lab
Panelists	Ben Fry , an expert in data visualization and information design and co-developer of Processing with Casey Reas Benjamin Bratton , Professor of Visual Arts at the University of California, San Diego, and Director of The Center for Design and Geopolitics think-tank at Calit2, The California Institute of Telecommunications and Information Technology. Bratton is an architect and design theorist best known for his theories on global computation and algorithmic governance. Casey Reas , Professor, University of California, Los Angeles, a computational artist and co-developer of Processing, a programming language geared towards the visual arts

[Manu Prakash](#), Professor of Bioengineering at Stanford University, a scientist and physicist working at the intersection of physical biology and computing. Manu also developed the Foldscope, a dollar microscope, and is a pioneer of the frugal science movement.

[Benjamin Bratton](#)

[Nadya Peek](#), Research Assistant, Center for Bits and Atoms, MIT, is best-known for her work on machines that make machines and object-oriented hardware

WEARABLE

Friday, April 21, 2017, 3:30 – 5:30pm

The integration of the human body and clothing with technology has propelled art, computationally enhanced fashion design, and materials science far beyond visions of the cyborg proposed in the 1960s. This session explores the multiplicity of these developments, from the emergence of conceptual fashion design and wearable computing in the 1990s to current experiments with electronic and reactive textiles and portable sensing systems that provide data feedback to monitor health or enhance physical performance. It asks what it means today to be “human, not so human.”

Participants

Introduction

Leila Kinney

Moderator

[Azra Aksamija](#), Associate Professor, MIT Program in Art, Culture and Technology, artist and architectural historian

Panelists

[Christina Agapakis](#) is a biologist, artist, writer, and creative director at Ginkgo Bioworks, an organism design company that is bringing biology to industrial engineering. She explores the aesthetics of biotechnology and has made cheese from the artist Olafur Eliasson’s tears.

[Hussein Chalayan](#), fashion designer. For more than 20 years, Chalayan has used clothing as platform to display materials that change state and transform themselves. His work is characterized by an adventurous, bold incorporation of technology and an ability to address conceptual issues—such as disembodiment, metamorphosis, mobility, and forced migration— through fashion. Chalayan’s experimental practice has turned the runway show into a sophisticated, multimedia form of performance art.

[Michelle Finamore](#) is Penny Vinik Curator of Fashion Arts at the Museum of Fine Arts, Boston, where she recently curated the *#techstyle* exhibit. She is the author of *Hollywood Before Glamour: Fashion in America*.

[Lucy McRae](#) is a sci-fi artist, film director, and self-proclaimed body architect. In films, music videos, and installations, she places the human body in complex, futuristic scenarios and designs prosthetic extensions that confound the boundaries between the natural and the artificial.

[Natasha Schüll](#) is Associate Professor of Media, Culture, and Communication at New York University. Her next book, *KEEPING TRACK: Sensor Technology, Self-Regulation, and the Data-Driven Life*, which will appear in 2017, concerns the rise of digital self-tracking technologies and the new modes of introspection and self-governance they engender.

LIVABLE

Saturday, April 22, 2017, 10:00am – 12:00pm

“Life”—and livability—is informed by the biotic and the social. Land art of the 1960s and 1970s developed in tandem with new discourses in ecological science and environmental politics. The 1990s saw the rise of “bioart,” as artists worked with bioengineered genes, cells, and organisms as new materials with which to query the possibilities and politics of biotechnology. Exploring questions such as: how do today’s art, science, and economics of the “livable” elaborate these concepts into projects of biological design, networked ecology, and environmental remediation? This session documents and imagines new forms and approaches to “livable material.”

Participants

Introduction	Rebecca Uchill
Moderator	Bettina Stoetzer is an anthropologist interested in the intersections of ecology, globalization, and urban life.
Panelists	Tal Danino , Director, Synthetic Biological Systems Laboratory, Columbia University. Danino is a synthetic biologist engineering some of the smallest forms of life, in the form of “programmable” bacteria. Bill Maurer , Dean, School of Social Sciences and Professor, University of California, Irvine. Maurer is a cultural anthropologist of law, property, and finance, examining how new kinds of monetary practices (around BitCoin, mobile banking) commoditize unexpected aspects of social, biological, and ecological life. Claire Pentecost , Professor, Department of Photography, School of the Art Institute of Chicago. Pentecost is an artist who researches the living matters of food, agriculture, and bio-engineering; her <i>soil-erg</i> project of 2012 considered the material of soil as a commodity, proposing a soil-based currency system.

INVISIBLE

Saturday, April 22, 2017 1:30 – 3:30pm

Material things bear the traces of their conditions of production and circulation. Sometimes these traces are invisible but rendered visible—as carbon footprints or carbon offsets, as contaminated or reclaimed geographies, as toxic waste or as renewable energy. Other times, such signs are enforced as invisible, out of everyday view or otherwise occluded. This panel considers today’s shifting lines between the visible and the invisible. Panelists will discuss cloaking, “operational” machine seeing, clandestine or surveillance media, and other technologies that change what it means to see and be material.

Participants

Introduction	Stefan Helmreich
Moderator	Sandy Alexandre , Associate Professor, Literature Department, MIT. Alexandre writes on black American material culture—particularly literature and photographs—examining how histories of black displacement, invisibility, and vulnerability haunt and energize the ways black lives matter now.
Panelists	George Barbastathis , Professor of Mechanical Engineering, MIT.

Barbastathis is a mechanical engineer known for creating an optical invisibility cloak, a calcite crystal system that may make possible hiding objects in plain sight.

[Michelle Murphy](#), Professor, History Department and Women and Gender Studies Institute, University of Toronto. Murphy is a historian of science who studies often invisible infrastructures of environmental toxins, reproductive technologies, and compromised environments.

[Trevor Paglen](#) is an artist and geographer who explores and documents invisible infrastructures, ranging from secret corporate and government sites to networks known through technologies of non-human, machine vision.

[Lisa Parks](#), Professor of Comparative Media Studies, Massachusetts Institute of Technology. Parks is a media theorist who writes on television, satellites, drones, and infrastructures of surveillance.

AUDIBLE Concert

Saturday, April 22, 2017, 8:00pm

In a concert that brings together the themes discussed during the symposium, musicians will perform works in tribute to the late composer Pauline Oliveros, the first female electronic music pioneer. Performances feature the Mellon Distinguished Visiting Artist at CAST Maya Beiser performing on cello, whose sound will stimulate self-assembling materials developed by Skylar Tibbits; and Grace Leslie, whose brain waves will stimulate and change the music performed by her mind-body music practice with Maxwell Citron (HOMHOMHOM). Other featured performances will include work by Evan Ziporyn.

MIT Kresge Auditorium, [Building W16](#)
48 Massachusetts Avenue
Cambridge, MA 02139

Participants

Artistic Director [Evan Ziporyn](#) is a composer/clarinetist and Kenan Sahin Distinguished Professor of Music at MIT. He is Faculty Director of CAST and Section Head of Music & Theater Arts.

Artists [Maya Beiser](#), Mellon Distinguished Visiting Artist at MIT CAST, cellist, and producer, defies categories while passionately forging a career path through uncharted territories. She has dedicated her work to reinventing solo cello performance in the mainstream classical arena.

[Grace Leslie and Maxwell Citron](#): Grace is an electronic musician and music cognition researcher. She develops and performs with Brain-body Music Interfaces and conducts neuroscientific studies of music engagement and sound experience through sound art and interactive music electronics. Max is a Chicago-based media artist and founder of the HOMHOMHOM label.

ABOUT THE CENTER FOR ART, SCIENCE & TECHNOLOGY

A major cross-school initiative, the MIT Center for Art, Science & Technology (CAST) creates new opportunities for art, science and technology to thrive as interrelated, mutually informing modes of exploration, knowledge and discovery. CAST's multidisciplinary platform presents performing and visual arts programs, supports research projects for artists working with science and engineering labs, and sponsors symposia, classes, workshops, design studios, lectures and publications. The Center is funded in part by a generous grant from the Andrew W. Mellon Foundation. Evan Ziporyn is the Faculty Director and Leila W. Kinney is the Executive Director.

Since its inception in 2012, CAST has been the catalyst for more than 35 artist residencies and collaborative projects with MIT faculty and students—20 cross-disciplinary courses and workshops, four concert series and numerous multimedia projects, lectures and symposia. The visiting artists program is a cornerstone of CAST's activities, which encourages cross-fertilization among disciplines and intensive interaction with MIT's faculty and students.

HISTORY OF VISITING ARTISTS AT MIT / RECENT ARTISTS

Since the late 1960s, MIT has been a leader in integrating the arts and pioneering a model for collaboration among artists, scientists and engineers in a research setting. CAST's Visiting Artists Program brings internationally acclaimed artists to engage with MIT's creative community in ways that are mutually enlightening for the artists and for faculty, students and research staff at the Institute. Artists who have worked extensively at MIT include Mel Chin, Olafur Eliasson, Rick Lowe, Vik Muniz, Trevor Paglen, Tomás Saraceno and Anicka Yi. As CAST's inaugural Visiting Artist, Saraceno initiated ongoing collaborations with researchers in Civil and Environmental Engineering and Earth, Atmospheric and Planetary Sciences, which have generated a master's thesis and three senior projects to date, and his large-scale installations and aerosolar projects are inspiring further research into bio-inspired building materials and simulations of atmospheric turbulence and ozone depletion. Pedro Reyes is the inaugural Dasha Zhukova Distinguished Visiting Artist at the MIT Center for Art, Science & Technology, currently teaching a course and developing a new work during his residency at MIT.

ABOUT THE ARTS AT MIT

Over 70 percent of incoming freshmen have prior training in the arts, and nearly 50 percent of all MIT undergraduates enroll in arts courses each year. The arts strengthen MIT's commitment to the aesthetic, human and social dimensions of research and innovation. Artistic knowledge and creation exemplify MIT's motto—*mens et manus*, mind and hand. The arts are essential to MIT's mission to build a better society and meet the challenges of the 21st century.

For more information, visit arts.mit.edu

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