

Are You  
a Model?

# Program

International Conference  
at Technical University of  
Darmstadt

2.–4.11.  
2022



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# Are You a Model?

On an Architectural Medium of  
Spatial Exploration

International Conference,  
Technical University of Darmstadt,  
November 2–4, 2022

Are you a model? A questionable start to a conversation one might think, and yet, architecture does beg the question. What does it mean to call something a model? Which implications, projections or desires are called to the table? Architects do not build buildings, they draw plans, they model structures or produce objects; all practices with a longstanding tradition in architecture – be they analog or digital. As a discipline working with substitute media and through displaced methods, we might ask of objects indeed: Are you a model? More than a pickup line, we want to put the model front and center in an assessment of architectural thinking and doing. We aim to explore the role architectural models play in professional and societal processes, as referents not merely of scale or form, but of architectural knowledge.

In nine moderated sessions and two keynotes over the course of three days, we will investigate together how architectural models are constructed or destroyed, how they operate, what they promise – and if that promise holds –, and which kinds of knowledge they produce. We hope to uncover new approaches and diverse takes on the model as both instrument and phenomenon in architecture and its history.

12:00

Registration

Main location: Wilhelm-Köhler-Saal, S1 | 03

Altes Hauptgebäude, Hochschulstraße 1, Darmstadt

12:45

Welcome

13:00–15:00

① Does size matter?

13:00

Anna-Maria Meister

Technical University of Darmstadt

Introduction

On models and scales

13:15

Evangelos Kotsioris

The Museum of Modern Art

Plasticine vs. glass: Negotiation models for the United Nations headquarters

13:35

Giulia Boller

ETH Zürich

Heinz Isler's small-scale physical models: An interplay between form and forces

13:55

Carlotta Darò

ENSA Paris Malaquais and ETH Zürich

The acoustic scale: Immersive reduced spectacles

14:15

Ruth Ezra

University of St Andrews

Muscovy glass, from fenestration to demonstration

14:35

Discussion

15:00

Coffee break

15:30–17:30

② Who made me?

15:30

Anna Luise Schubert

Technical University of Darmstadt

Introduction

On their material production

15:45

Matthew Wells

University of Manchester

Object, manual, material, collection

16:05

Erik Herrmann

The Ohio State University

Vjenceslav Richter and the Reliefmeter

16:25

Sebastiaan Loosen

ETH Zürich

Mr. Dennis' model: Organizing knowledge in the postcolonial era

16:45

Eliza Pertigkiozoglou

McGill University

Building models of practice: The OXSYS software for hospital design, 1969–1974

17:05

Discussion

17:30

Break

19:30–21:00

⦿ Keynote

Evening location: Max-Guther Saal, L3|01 Architektur,

El-Lissitzky-Straße 1, Darmstadt

Annabel Jane Wharton

Duke University

Am I good?

21:00

Opening reception

8:30

Registration

9:00–11:00

③ Give me access!

9:00

Oliver Elser

Deutsches Architekturmuseum

Introduction

On models in participatory processes

9:15

Maxime Zaugg

ETH Zürich

In the eye of the beholder: New representation techniques for public urban scale models

9:35

Ecaterina Stefanescu

Univ. of Central Lancashire

Rooms: Modelling migrancy in the context of Berlin

9:55

Tamar Zinguer

University of Oklahoma

Worlds in a box: Modeling (inner and outer) landscapes

10:15

Cansu Degirmencioglu

Technical University of Munich

& Deniz Avci Hosanli

Izmir University of Economics

The politics of cutting and gluing: Architectural models as propaganda in early Republican Turkey

10:35

Discussion

11:00

Coffee break

11:30–13:10

④ What the hell happened to me?

11:30

Teresa Fankhänel

Eli and Edythe Broad Art Museum at Michigan State University

Introduction

On their afterlife and decay

11:45

Stéphanie Quantin-Biancalani

Contemporary Architecture Collection in the Cité de l'architecture et du patrimoine

Crossing and transformation. About Paul Andreu's sphere models

12:05

Stefanie Brünenberg & Kai Drewes

Leibniz Institute for Research on Society and Space

How to use architectural models: Connecting archive and research

12:25

Daniel Cardoso Llach

School of Architecture at Carnegie Mellon University

Models and visions. Experimental reconstructions of design pasts

12:45

Discussion

13:10

Lunch break

14:30–16:10

⑤ What is my act?

14:30

Lisa Beißwanger

Technical University of Darmstadt

Introduction

On models as actors and stages

14:45

Christian Janecke

University of Arts and Design in Offenbach/Main

Modelling scenic attitudes. On funnels, conical stairs and caveae in postmodern architecture

15:05	Giulia Amoresano	University of California, Los Angeles
	Christina Moushoul	Princeton University
	From site to set: The multi-scalar effect of architectural models in crafting gender and sexuality in postwar Italy	
15:25	Mara Trübenbach	Oslo School of Architecture & Design
	Sculptural puzzles. A conversation essay about model making, rituals and material literacy in architecture	
15:45	Discussion	
16:10	Coffee break	

## 16:40–18:40 ⑥ Am I the real thing?

16:40	Christiane Fülischer	
		Dortmund University of Applied Sciences and Arts
	Introduction On copies and casts	
16:55	Diana Cristobal Olave	Princeton University
	One-to-one scale: Witnessing the Walker Art Center's Idea Houses I and II (1941–1947)	
17:15	Ana Carolina Pellegrini	
		Federal University of Rio Grande do Sul
	Unstuck architectures: When the building becomes a model	
17:35	Wonseok Chae	Bergische Universität Wuppertal
	The modeling grammar of the real	
17:55	Simona Valeriani	
		Victoria & Albert Museum and Royal College of Art
	Studying, copying, making, sharing. Multiple approaches to an historical model.	
18:15	Discussion	
18:40	Break	

## 19:30–21:00 ⑦ Evening talk

with Thomas Demand [online], Annabel Jane Wharton & Anna-Maria Meister

## Friday 4.11.22

8:30 Registration

## 9:00–11:00 ⑦ Do we look alike?

9:00	Chris Dähne	Goethe University Frankfurt am Main and
		Technical University of Darmstadt
	& Andreas Noback	Technical University of Darmstadt
	Introduction On digital multiples twins and simulation processes	
9:15	Gabriele Gramelsberger	RWTH Aachen
	Digital twin, metaverse and computerbased simulation	
9:35	Yana Boeva	University of Stuttgart
	The model multiple: On approximation work in digital models and twins	

9:55	Baris Wenzel	Karlsruhe University of Applied Sciences
	Digitally recreating the Mannheim Multihalle model – Exploring the simulation of physical form-finding in the tradition of Frei Otto	
10:15	Carolin Höfler	TH Köln
	Models in reality: Computation and simulation in architecture	
10:35	Discussion	
11:00	Coffee break	

## 11:30–13:10 ⑧ Where are you going?

11:30	Nadja Gaudillière-Jami	Technical University of Darmstadt
	Introduction On models in future practice	
11:45	Andreas Pilot	Technical University of Darmstadt
	Built together! Digital models and teaching teamplay	
12:05	Salome Schepers	ETH Zürich
	The mock-up	
12:25	Beth Hughes & Adrian Lahoud	Royal College of Art
	Set and setting: Architecture and the rehearsal of sense	
12:45	Discussion	
13:10	Lunch break	

## 14:30–16:10 ⑨ What can you learn from me?

14:30	Christina Clausen	
		LOEWE Research Cluster "Architectures of Order"
	Introduction On model didactics	
14:45	Kelly Joan Whitmer	Sewanee: The University of the South
	Games, models and projects in pedagogical praxis, c. 1650–1750	
15:05	Alberto Calderoni	University of Naples
	What we have learned, so far	
15:25	Holger Zaunstöck	Francke Foundations Halle
	What am I, actually? The model of the Halle orphanage (1719/20)	
15:45	Discussion	
16:10	Coffee break	

## 16:30–17:00 Closing remarks

Wednesday

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13:00–15:00

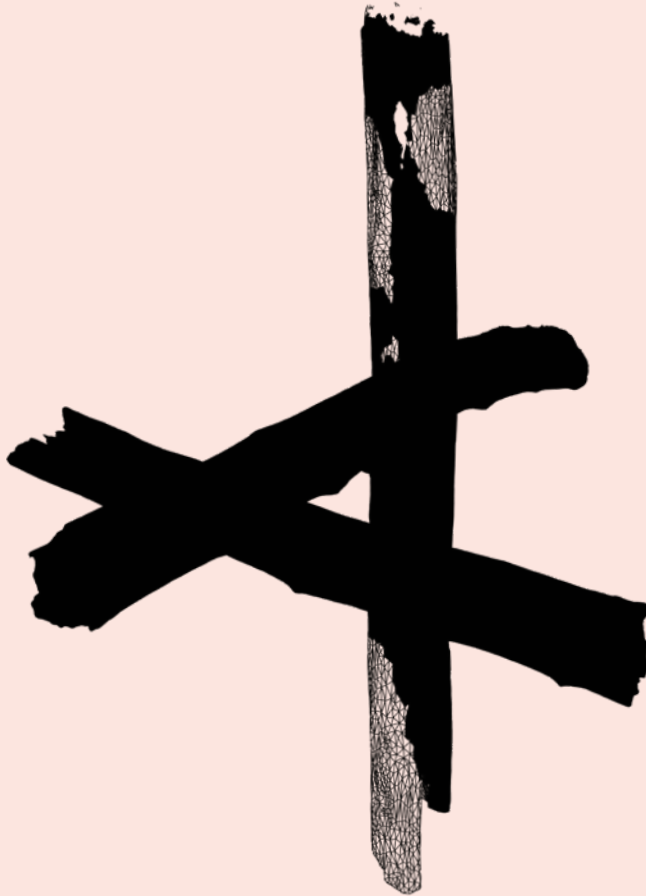
① Does size matter?





15:30–17:30

② Who made me?



19:30–21:00

⊙ Keynote

# 13:00–15:00

## ① Does size matter?

13:00 Anna-Maria Meister

Technical University of Darmstadt

Introduction:  
On models and scales

The question of scale is built into the story of architectural models. How large, how detailed, or how long-lived a model is defines not only its appearance, but its role in the process. By investigating relationships between size, material, temporality of different models we will try to uncover assumptions about models as miniatures or stand-ins, and try to discuss how scale matters.

Anna-Maria Meister is Professor of Architecture Theory and Science at Technical University of Darmstadt. Her work focuses on the interdependencies of bureaucratization of design and the design of bureaucracies. She has co-curated the collaborative international research project “Radical Pedagogies” and co-edited the recently published eponymous book (MIT Press, 2022).

13:15 Evangelos Kotsioris

The Museum of Modern Art

Plasticine vs. glass: Negotiation  
models for the United Nations head-  
quarters

Can architectural models construct social relationships? This simple question is here interrogated by examining the key role played by physical models in the design and construction of the United Nations Headquarters in New York between 1947–52. Erected on international territory, the UN HQ complex was famously publicized as the result of a harmonious collaboration among the members of an international Board of Design comprising ten (male) architects and headed by Wallace K. Harrison. Behind closed doors, however, the entire endeavor quickly unraveled into a tumultuous battle between architectural egos. Over the course of five months, the self-proclaimed “workshop for peace” run an uphill marathon of 45 meetings, before finally compromising to a commonly tolerated design – a “chimera” of two option models proposed by Oscar Niemeyer and Le Corbusier.

Using the UN HQ as a case study, this paper recasts two types of architectural models as active social agents: first, the countless plasticine scale models used to compare massing options during the design stage; and second, the deployment of a singular-glass and-steel 1:1 mock-up for detailing the curtain wall façade of the Secretariat during construction. On the one hand, the iterative use of abstract mass models – perfected by Harrison during the design of the Rockefeller Center – was strategically deployed as a seemingly “neutral” tool for the negotiation of divergent design intentions among opposing architects. And on the other, the reduction of the real-scale mock-up to a visual object, resulted into the infamously compromised climatic performance of the Secretariat building, the users of which would ultimately have to antagonistically negotiate their thermal comfort with each other for decades to come.

Evangelos Kotsioris is Assistant Curator in Architecture & Design at The Museum of Modern Art in New York. Trained as an architect and a historian, his research focuses on the intersections of architecture with science, technology and media. Kotsioris is a co-editor of *Radical Pedagogies*, a global history of post-WWII experiments in architectural education published by MIT Press in 2022.

## Heinz Isler's small-scale physical models: An interplay between form and forces

In September 1959, at the founding conference of the International Association for Shell Structures, a 33-year-old Swiss engineer presented an innovative method for the conceptual design of shells based on the use of small-scale physical models. His name was Heinz Isler (1926–2009). The physical models enabled Isler to control architectural as well as structural features while obtaining “elegant forms” with minimal use of material. Through them, he opened up endless possibilities of shape by controlling the relation between form and forces at a time when digital tools were not available.

Physical models helped Isler to reflect on his design, being constructed in multiple variations and on different scales for the same project. The presentation will look at Isler's most complex free-form project – the company building Sicli SA in Geneva (1969) – through the multiple physical models fabricated in his laboratory. Isler used them as research technologies on a small scale. Indeed, not every physical model behaved in the same way: they were made with different materials, on different scales and for different purposes. The experiment worked if the model's results could be scaled up linearly to foresee the full-scale behaviour. A wrong choice of material, technique and tool could cause wrong shapes and therefore wrong results. The presentation will investigate the role of scale in Sicli's physical models at the different design stages, in their process of translation from one model to the other: from the initial concept to form-finding, until the full-scale building as a 1:1 physical model.

Giulia Boller is a scientific assistant and PhD student at the Chair of Structural Design at ETH Zürich (Switzerland). She is both an engineer and an architect. Her research interests lie at the interface between architectural and structural design, with a focus on tools and methods that integrate form, material aspects, and flow of forces. Giulia gained professional experience at Renzo Piano Building Workshop. She graduated with honours in Building Engineering-Architecture at the University of Trento (Italy) in 2015.

## The acoustic scale: Immersive reduced spectacles

Acoustic models on a scale of 1:10 or 1:20 are experimental objects that enable acoustic tests to be carried out by reducing the spatial parameters that define the behavior of sound: the volume of the room, the absorption coefficient of the materials and the public, the frequency of the sound signal, up to the constitution of the air. This practice dates back to an earlier history (among others to Friedrich Spändoch in the 1930s) and is linked to the empirical tradition of testing acoustic vibration into circumscribed material *milieux* such as sand or liquids (of which the 1787 *Klangfiguren* by the physicist and musician Ernst Florens Friedrich Chladni is a groundbreaking example), but also to a 19<sup>th</sup>-century tradition of synthetic translations of real space (the panorama, the diorama). Large scale models currently find systematic applications, surprisingly, in combination with numerical acoustic modeling. Thus, while numerical models are particularly used during the initial design phase, when the general form and basic principles of the project are still in the process of being investigated, physical models allow, in a second stage, the empirical testing of the material details that condition the final acoustic result. Experimentation using scale reproductions is based on an atmospheric understanding of space (sound, light, air, visual properties, textures, etc.). Taking this as a central argument, the paper aims to question different forms of representation and analysis of space by insisting on the complementarity of measurable objective data and subjective methods of appreciation.

Carlotta Darò is architectural historian, associate professor at the ENSA Paris Malaquais and currently guest researcher at ETH Zürich. Her work explores the subject of sound media and technologies in modern architecture. She is the author of *Avant-gardes sonores en architecture* (2013), *Les murs du son: le poème électronique au Pavillon Philips* (2015) and *Paysage de lignes: esthétique et télécommunications* (2022).

## Muscovy glass, from fenestration to demonstration

In Joseph Friedrich zu Racknitz's 1796–99 *Presentation and History of the Taste of the Leading Nations...* (Darstellung und Geschichte des Geschmacks der vorzüglichsten Völker...), the German aristocrat remarks of Siberian muscovite that it is employed for window panes, lanterns, and ships' portals as well as 'to glaze the windows in architectural models.' Rather than focus on direct evidence for Racknitz's claim, this paper will consider mica's role as an ersatz window in objects produced in the century and a half preceding publication of his treatise. I focus on boundary cases – a pop-up window in a perspective manual; an embroidered castle of Biblical myth; a Rococo interior painted on a hand-held fan – that are both architectural in form and miniature in size, if not architectural models per se. I show how small-scale mineral-glazed windows served as both tools and testaments of skill, facilitating education in practical mathematics on the one hand and drawing-room travel on the other. Mica's incorporation into the early modern architectural imaginary dramatizes a culture of interaction between art and science, amateurs and experts, foreign lands and domestic spaces.

Ruth Ezra is lecturer in Art History at the University of St Andrews, where she specializes in the material and visual culture of early modern northern Europe. After completing her PhD at Harvard University, she served as a postdoctoral scholar with the USC Society of Fellows in the Humanities. In 2022–23 she is a NOMIS fellow at eikones, Universität Basel.

# 15:30–17:30

## ② Who made me?

15:30 Anna Luise Schubert

Technical University of Darmstadt

Introduction:  
On their material production

Exploring the space between a model's production and its reception, the story of its becoming remains often obscure; similarly, its material logic, the nuts and bolts and undersides remain craftfully out of sight. Whether built in large model workshops within architecture offices or through external contractors, by skilled experts or laypeople, we want to assess the conditions under which models are produced, be it as video game, competition entry, or 1:1 mock-up by investigating the process of model making, its tools and its actors.

15:45 Matthew Wells

University of Manchester

Object, manual, material, collection

In 1895 a hand-crafted architectural model of a house was placed on display by Edward Schroeder Prior at the Royal Academy exhibition in London. Prior's clay model was the first on display for the first time in 21 years. Although 'rough in appearance', the architectural press described how it was 'revolutionary in its tendencies'. 300,000 visitors visited the exhibition, major architectural journals received hundreds of letters about it, and Prior clarified his ideas in a theoretical essay titled 'Architectural Modelling'. Why did this all happen? And what can it tell us about architectural practice at the turn of the 20<sup>th</sup> century? To address these questions this paper will employ Prior's clay model to examine how architectural models were made, used, and conceptualised throughout the 19<sup>th</sup> century. Focusing on London, the paper will study the activities of individual agents and organisations through objects, documents, and materials to contextualise the topic, using them to draw connections between British and German-speaking architectural cultures.

Anna Luise Schubert is an architectural researcher, curator and filmmaker. She is a board member of the Centre for Documentary Architecture, with which she co-conceived its online archive project, organised the exhibition series "The Matter of Data" and worked on internationally presented films such as the 8-screen video installation "Deep White" (35min, 2019). She works currently as a research associate at the Chair of Architectural Theory and Science at TU Darmstadt.

Matthew Wells is lecturer in Architectural History at University of Manchester and member of the Manchester Architecture Research Group (MARG). His research uses architecture and visual culture to examine society, institutions, and individuals in the long nineteenth century. Wells is the author of two monographs *Modelling the Metropolis: The Architectural Model in Victorian London* (gta Verlag, 2022) and *Survey: Architecture Iconographies* (Park Books, 2021).

## Vjenceslav Richter and the Reliefmeter

In the early 1960s, Croatian artist and architect Vjenceslav Richter launched an ambitious genre of visual research called Systematic Plastics. Richter's purpose-built implement for this work was the Reliefmeter, an enormous grid of hundreds of interlocking metallic extrusions that slid in and out independently. Richter used this pixelated canvas to test reciprocal relationships between individual components and collective systems in a kinetic design methodology mixing intuition and logic. As an architect, Richter employed his new spatial tool to develop visionary projects like Synthurbanism, a utopian manifesto for self-managed urban structures. This presentation will interrogate how the design, fabrication, and use of the Reliefmeter liberated Richter's spatial research from the limits of mechanical modes of orthographic representation and shaped new knowledge in his approach as both a sculptor and architect. A vital member of the New Tendencies movement, Richter presciently foresaw computer-based visual research, but his technical knowledge and machine access were limited. Instead, Richter developed the Reliefmeter as a proto-digital interface to ensure his visual research was analogous to the emerging medium of bits and bytes. The Reliefmeter is not a discrete model but a remarkable tool uniquely entrenched in tendencies and habits of both analog and digital modeling. The dynamic model evinces Richter's explicit understanding that the future of model making and art was not in static objects but within a digitized ether in perpetual flux.

Erik Herrmann teaches architecture at The Ohio State University and co-directs Outpost Office. His research interrogates how digital technologies' biases and tendencies alter the design process, focusing on the shifting roles of architects. He is a MacDowell Fellow, Walter B. Sanders Fellow of the University of Michigan, and a German Chancellor's Fellow of the Alexander von Humboldt Foundation.

## Mr. Dennis' model: Organizing knowledge in the postcolonial era

In an image, the director of a Nordic aid project is didactically explaining the model of a low-cost housing unit to President Julius Nyerere shortly after Tanganyika's independence. A man on the far left with a calm and resigned posture is Mr. Dennis: the carpenter who not only made the models, but also shared his expertise with the Swedish site architect on the design of these newly built houses. While I can give you all the names of the Nordic aid workers involved in the Nordic Tanganyika Project, I cannot give you Mr. Dennis' surname.

Intended to communicate Nordic driven research on the best way to build and live in Tanganyika, the model in this image can be read as an avatar of development aid expertise. By analyzing it as an object enmeshed in networks of power and knowledge, I argue that the architectural model takes part in organizing and facilitating a certain distribution of knowledge, showcasing foreign aid 'expertise' as politically valuable whilst rendering local knowhow as inherently irrelevant. Moreover, the struggle to name the model's maker is indicative of our unbalanced archives that tend to reproduce the narrative of the African continent being merely on the receiving end of aid, while in reality aid expertise was heavily reliant on the collaborations with the many unnamed skilled craftsmen such as Mr. Dennis. Embodying this reality, the model exemplifies the interdependency of two worlds meeting in the context of aid – an interdependency which we as historians should seek to unearth.

Sebastiaan Loosen is a lecturer and postdoctoral researcher based at ETH Zürich's Institute for the History and Theory of Architecture (*gha*). His postdoctoral research project aims to chart the role of architectural schools, centres and institutes in contributing to the 1960–80s agenda of 'foreign aid' by offering 'South-oriented' training programs in architecture, urbanism, and spatial planning.

16:45 Eliza Pertigkiozoglou

McGill University

## Building models of practice: The OXSYS software for hospital design, 1969–1974

In 1969, the Oxford Regional Hospital Board approached a newly-form consultancy named Applied Research of Cambridge (ARC) – a spin-off of the University of Cambridge Department of Architecture – asking them to develop software for their hospital design and construction system known as the *Oxford Method*. The British authority had spent the past five years outlining this standardized system in numerous handbooks, cataloguing hundreds of building components and plan typologies. ARC's assignment was to translate an already-rationalized building system into the computational descriptions of the OXSYS software. However, this translation task soon became a problem of structuring information's access and retrieval in ways that conform with the state governance and the monitoring of building construction. That is, OXSYS encoded a system of construction – a model of building – and proposed an information system – it built a model. In this paper, I focus on the OXSYS's database structure, documented in research reports and user manuals, as the element that enabled the integration, both pragmatically and conceptually, of building and information systems into a single computational model. By looking at the OXSYS software through its data structures, I rehearse a novel historiographic approach to software as *models of practices*. Such an approach means attending to how computational systems produce operational representations of existing practices, embedding their directives and assumptions. Ultimately, this paper argues that computerizing a model of building such as Oxford's system for hospital design is, in fact, an attempt to operationalize a model of practice.

Eliza Pertigkiozoglou is a PhD candidate in Architecture at McGill University and a Vanier Scholar. Her research examines how building design software has historically encoded and enacted architectural practices. Before her PhD, Eliza worked at Gehry Technologies, developing custom software for complex architectural projects. Eliza holds an MDes from Harvard University and an MArch from the National Technical University of Athens.

19:30–21:00  
☉ Keynote

Annabel Jane Wharton

Department of Art, Art History and Visual Studies,

Duke University

Am I good?

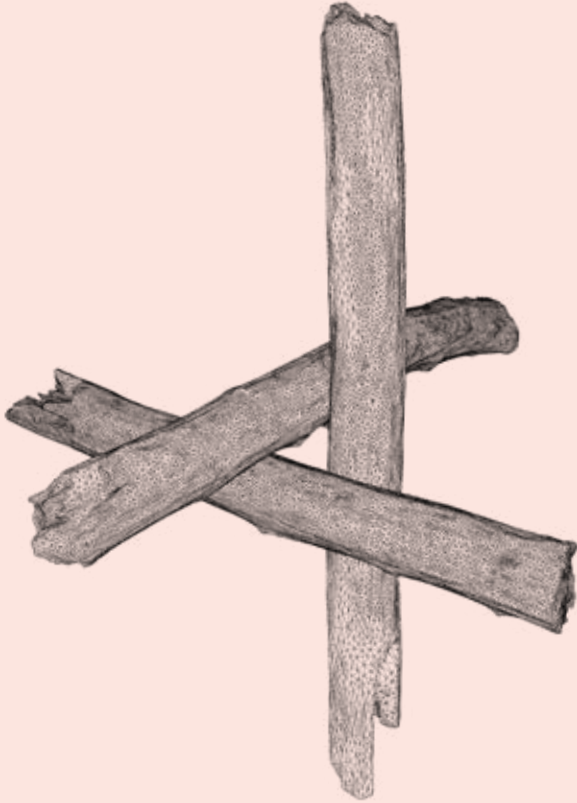
The title of this conference, *Are You a Model?* assumes the agency of models. *Am I good?* reinforces that assumption by probing its ethical implications. Through an investigation of a model prisons, the paper argues that models are, indeed, ethical agents and that they should be held accountable for their acts.

Location: Max-Guther Saal, L3|01 Architektur,  
El-Lissitzky-Straße 1, Darmstadt

Annabel Jane Wharton, William B. Hamilton Professor of Art History, Duke University, has also taught as the Harry Porter Visiting Professor of Architectural History at the School of Architecture of the University of Virginia and as a Vincent Scully Visiting Professor of Architectural History at the Yale University School of Architecture. Her most recent publications include *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings and Models and World Making: Bodies, Buildings, Black Boxes*.

9:00–11:00

③ Give me access!



11:30–13:10

④ What the hell happened to me?





14:30–16:10

⑤ What is  
my act?

16:40–18:40

⑥ Am I the  
real thing?



19:30–21:00

⊙ Evening talk

# 9:00–11:00

## ③ Give me access!

9:00 Oliver Elser

Deutsches Architekturmuseum

Introduction:  
On models in participatory  
processes

Models seem to promise easier access for non-experts than highly codified media such as construction drawings; it is also taken to not pre-set the point of view from which it is being seen. It may seem as if models are inherently participatory objects – a simulation toward a more inclusive future, be it through city models of new infrastructure or technological measures such as endoscopes to look at architecture from a pedestrian's point of view; all at the same time when processes were developed to allow for other ways of participation of non-experts, alternative points of view or models open to interpretation.

Oliver Elser is a curator at the Deutsches Architekturmuseum (DAM) in Frankfurt am Main. He is the co-founder of the Center for Critical Studies in Architecture (CCSA), and has been visiting professor for architecture theory at the KIT in Karlsruhe in 2021. In 2016 he was the curator of Making Heimat, the German Pavilion at the Venice Architecture Biennale.

9:15 Maxime Zaugg

ETH Zürich

In the eye of the beholder:  
New representation techniques for  
public urban scale models

With the emergence of public participation in urban design in Europe during the 1960s, the physical urban scale model became essential as a mediator between professionals and the public. However, the degree to which the urban scale model engages the public in urban discourses and projects depends on different factors. While technical properties such as scale, abstraction, and materiality are important for the readability of the urban model, the scenographic staging of the models in public exhibitions and presentations influences their interaction with the audience. The agency of urban scale models is also heavily affected by techniques of representation, including photographic and cinematographic representations in printed popular media and filmed models on television.

This paper explores the impact of evolving representation techniques on the ability of the urban scale model to engage the public. It focuses on the technique of 'relatoscopy', investigating the project of *Les Halles* in Paris from the 1960s to the 1980s. A technique of photographing models with an endoscope, resulting in images from the human eye's perspective, relatoscopy, first conceived and employed in architecture and urban design by the French architect Martin Schulz van Treeck, allowed the public to better understand the model. However, relatoscopy transformed the perception of the model from a bird's-eye view, which leaves the audience room for interpretation, to a perception of the model at human-eye level, from 'within', which leaves less room for interpretation. This technique therefore allows more control and manipulation of the perspectives conveyed.

Maxime Zaugg is an architect and doctoral candidate at the Chair of the History and Theory of Urban Design at ETH Zürich. His dissertation, entitled 'Exploring Urban Models', researches how strong performative and participative characteristics have enabled urban scale models to play a key role in urban planning, focusing particularly on the period from the late 1960s to the 1990s.

## Rooms: Modelling migrancy in the context of Berlin

Within research, design and architecture, scale models can create worlds of proposition, speculation and fiction. This paper, however, situates the model as a tool for observation, documentation and engagement; a slow, durational method that manifests a deep participation in the lives of place and people marginalised by wider society.

"Rooms" was an artistic and research project undertaken as part of the Urban Nation artistic residency in Berlin which looked at the Romanian immigrant community inhabiting the city, the spaces they occupy and appropriate, and the objects that they surround themselves with. These instances were drawn, surveyed, documented and then painstakingly recreated through 1:20 paper models, which were presented as part of a group exhibition.

For border-crossers in particular, the nostalgic association with native objects and artefacts can represent an inner, self-created intangible border, expressing the liminal identity associated with migrancy. This connection with objects found at the domestic scale is also to be found at the urban scale, where the Romanian Shop acts not only as the main hub for the Romanian diaspora in the city, but it is also the repository for the containment and consumption of memory.

Built to an extreme level of detail this model of an everyday space visualises, offers new insight, and gives a sense of value and recognition to the lived realities of individuals and communities ignored or disdained. A situated mode of research, the dedication to this form of representation transforms the seemingly mundane into an object of beauty and atmosphere, encouraging access and participation from the participant, maker and the viewer.

Ecaterina Stefanescu is an architectural designer, lecturer and artist based in the UK where she teaches architecture at the University of Central Lancashire. Her practice Estudio ESSE, co-founded in 2015, creates site installations and bespoke design work. Ecaterina uses live-build, model-making and drawing in her artistic and research work to respond to place and material cultures of people.

## Worlds in a box: Modeling (inner and outer) landscapes

Tactile model landscapes – mountains, even continents – were manipulated during the nineteenth century at schools for the blind, where the teaching of geography thrived. Zonia Baber, the first woman professor of Geography, embraced this practice at the University of Chicago in 1895, and her patented "sand desk" enabled all students to expand their geographical imagination by shaping, as if in play, land formations in sand.

Wargaming also thrived in sand-tables, ever since Leopold von Reisswitz conceived of *Kriegsspiel* in 1812, to entertain noblemen. These landscape models have remained strategic tools for the military over a century later, to better envision and navigate World War II plans.

As with the world war model, inner and outer worlds collided in similar trays full of sand set by Margaret Lowenfeld in 1927 in front of children, who then created a landscape and picked from a collection of miniatures to create a 'World.' Employed worldwide by therapists to this day, the World Technique has enabled the unraveling of the inner wars of the psyche. These worlds in boxes embody 'intermediate spaces of experience' as described by Donald Winnicott in *Playing and Reality* (1971); places of 'in-between', "to which inner reality and external life both contribute."

In this presentation, where the haptic and optic collide, I will examine how the intimate models touched by hand are tied to vast landscapes of social change; and how by manipulating model landscapes, the quest for inner resources and the conquest of external territories overlap.

Tamar Zinguer is an architect and architectural historian who examines the pedagogy of design through history and across scales. Her book – *Architecture in Play: Intimations of Modernism in Architectural Toys* (2015) explored how ludic models reflected their surroundings; while her present manuscript, *Sandbox: An Architectural History*, follows haptic material experiments in a ubiquitous playful space. She lives in a Bruce Goff House and teaches at the University of Oklahoma.

## The politics of cutting and glueing: Architectural models as propaganda in early Republican Turkey

In June 1939, the governor of Istanbul, Lütfi Kırdar inaugurated “an exhibition to fully demonstrate the decadal development of the nation in the industrial field.” It was the 11th Turkish domestic products’ exhibition, headlined by the exhibit “Istanbul on display” that showcased the contemporary renovations of Istanbul in architectural models. Kırdar’s full speech was published in Istanbul Municipality’s journal with many photographs. This moment demonstrated that architectural models were ‘mainstream’ in the popular culture of the young nation and part of the reformist iconography.

Reaching beyond the realm of architectural professionals, models engaged with the public through newspapers, popular publications and thematic exhibitions held for the masses. The exhibitions were, in a sense, stages to enable interactive participation of the audience -the public- and the architectural models acted as political icons to consolidate the building power of the state in public opinion. The photographs of politicians examining the models, which circulated in the newspapers, were powerful messages, and bore compelling testimonies to the state-initiated modernization project, physically (the country as the construction site) and ideologically in form, style, and more importantly in culture.

Engaging with the literature on the role of representation in the architectural culture of the early republic (1930s and 1940s), this paper analyzes examples from popular periodicals as mediums of mass circulation in which the models were center-pieces; and revisits the interactive function of the exhibitions as spaces of encounter between the modernization ideology of the state and the citizens, playing their parts within the construction of the nation. Ultimately, we aim to scrutinize the overlooked propagandistic role of architectural models and their reproduced images within the cultural transformations of the period.

Cansu Degirmencioglu is an interior architect, and a PhD candidate at the Technical University of Munich, the Chair of History of Architecture and Curatorial Practice. She received her bachelor’s and master’s degrees at Istanbul Technical University. Degirmencioglu is co-leading a grant-project titled “Architecture of Convalescence: Mapping the Sanatorium Heritage of Turkey.” Her research focuses on the modernization of Turkey and the intertwined histories of medicine and modern architecture, and is currently funded by DAAD.

Deniz Avci Hosanli

Historic preservationist, interior architect and environmental designer (MSc, METU; BSc, Baskent University) and architectural historian (PhD, METU) Avci-Hosanli’s (IEU, IAED) areas of expertise are housing production in early Republican Turkey; conservation of Modern Movement architecture and their interiors; early Turkish Republican period healthcare architecture; and concurrence of cinema and architecture. She is a committee member in “docomomo\_tr Interior Design” and co-leading a grant-project titled “Architecture of Convalescence: Mapping the Sanatorium Heritage of Turkey.”

11:30–13:10

## ④ What the hell happened to me?

11:30 Teresa Fankhänel

Eli and Edythe Broad Art Museum at

Michigan State University

Introduction:  
On their afterlife and decay

When the dust settles, models enter their afterlife: after they are built they reside on shelves in offices, stuffed in basements, behind glass or on hard drives in archives and museums. Some survive by accident but lose the context of their making, others take on a new role as (material or digital) spoliass. Others, like model parks or cities, might become ruins or survive outside the controlled spaces of archives. The resilience of glue and paper versus the upkeep of a digital model will be discussed here as much as the attempt to preserve not just material constructs or geometric shapes, but sensorial and spatial insights of models past.

Teresa Fankhänel is an associate curator at the Eli and Edythe Broad Art Museum at Michigan State University and co-founder and chief editor of the Architectural Exhibition Review. She was a curatorial assistant for "The Architectural Model" (2012) and has published two books on models ("The Architectural Models of Theodore Conrad," Bloomsbury, 2021, and "An Alphabet of Architectural Models," Merrell, 2021).

11:45 Stéphanie Quantin-Biancalani

Contemporary Architecture Collection in the

Cité de l'architecture et du patrimoine

Crossing and transformation:  
About Paul Andreu's sphere models

In the mid 1990s, the French architect Paul Andreu (1938–2018), renowned as the author of Roissy-Charles de Gaulle airports (terminal 1, 1967–1974; terminal 2, from 1972), as well as Beijing's National Opera (1999–2007), had seven sphere-shaped models specifically made for a series of touring exhibitions in France and Asia. Embedded within large metallic arches and set on a marble base, these exhibition models are not mere representations of Paul Andreu's major buildings, but crafted displays of carefully chosen projects - some unexecuted and unknown - with different scales, from bird's eye's views to sections of specific parts. These globes including the Roissy 1 airport's central space, the seasphere in Osaka, La Défense's so-called crater, as well as the Kumihamas golf course and the Hiroshima airport, all expressed a common ground, the symbolic crossing from one state to another, a spatial transition from earth to sky, from the square to the circle, or from Western to Eastern culture.

Neglected by their owner, these models underwent substantial modifications and definitively lost their original display system. If one is still missing, six were dispersed between different architecture collections (FRAC Centre, Musée national d'art moderne-Centre Pompidou, Cité de l'architecture et du patrimoine). The link between the spheres became less and less obvious, and the core meaning faded away. A current research for a coming exhibition aims at digging up their history and inventing curatorial practice to reenact their spatial symbolism.

Stéphanie Quantin-Biancalani is curator, head of the Contemporary Architecture Collection in the Cité de l'architecture et du patrimoine since 2016. She used to work as heritage curator in the Conservation régionale des monuments historiques - Direction des affaires culturelles de Lorraine (Heritage Division - Regional Directorate of Cultural Affairs of Lorraine) and was thereafter appointed as fellow in the Research Department of the National Institute of Art History.

## How to use architectural models: Connecting archive and research

The IRS Scientific Collections hold more than 80 architectural models of various sizes and made of different materials (wood, cardboard, polystyrene as well as combinations). There are urban planning models as well as wall developments (façade models), cutaway models and construction models of half-timbered houses from village areas. The models, deriving both from the GDR Building Academy and various architects, are in different states of preservation. They are not well-known as they can rarely be exhibited for reasons of space and conservation. Nevertheless, offering a unique view of a world as it could have been, they have a great potential for research in architectural history. We would like to use those IRS models made in the modelworkshop of the Building Academy to shed light on general questions concerning architectural models from the GDR and the difficulties while archiving them.

The models examined in detail include e.g. models for a nuclear plant in Greifswald and for the housing estate in Magdeburg-Olvenstedt. Both properties were gradually demolished after 1989 and are now barely perceptible as GDR testimonies. The models have high preservation costs and difficult storage conditions. Digitising them could make them more useful for researchers, e.g. for simulations of buildings that were demolished or never built. However, through digitisation they may also lose their authenticity value and thus remain valuable in the original, despite their conservation situation – which is almost a classic problem of digitising cultural assets. We hope for an intensive exchange concerning these questions.

Dr.-Ing. Stefanie Brünenberg is an architectural historian with a research focus on architecture and urban development in the GDR as well as post-war modern urban design theory.

Dr. Kai Drewes studied Modern History and became head of the Scientific Collections of the Leibniz Institute for Research on Society and Space (IRS) in Erkner near Berlin in 2013.

## Models and visions: Experimental reconstructions of designs pasts

Taking as a premise the mutual constitution of models – particularly those emerging as a result of the adoption of software in architecture and engineering – and specific regimes of vision, tact, and motion, this talk will sketch a view of models as always inseparable from bodies, materials, and experience. From this socio-material perspective models always exceed the boundaries of technological artifacts and representations, and entail complex techno-cultural arrangements. The reproducibility of a model is thus problematized, while the possibility of “re-presencing” it is reflected upon and experimentally explored. The talk will discuss examples from the “Experimental Archaeology of CAD” project, which reconstructs examples of early modeling software, and from the forthcoming book *Designing the Computational Image, Imagining Computational Design*, which documents an ongoing curatorial and research project examining the twentieth-century emergence of new methods for representation, simulation, and manufacturing linked to computers, and reflecting on their contemporary repercussions across creative fields.

Daniel Cardoso Llach is Associate Professor at the School of Architecture at Carnegie Mellon University. His work explores problems including social and cultural aspects of automation in architecture, the politics of representation and participation in software, and design as a socio-technical phenomenon. Among his publications is the book *Builders of the Vision: Software and the Imagination of Design* (Routledge, 2015), a cultural history of CAD and numerical control illuminating how postwar technological projects shaped conceptions of design informing current architectural practices, and the forthcoming *Designing the Computational Image, Imagining Computational Design* (Applied Research+Design, 2023) based on the eponymous exhibitions. He is founding co-editor of the “Design, Technology and Society” Routledge book series, holds a PhD and an MS (with honors) from MIT, and a BArch from the Universidad de los Andes, Bogotá. He has also been a research fellow at MECS, Leuphana, and a visiting scholar at the University of Cambridge.

# 14:30–16:10

## ⑤ What is my act?

14:30 Lisa Beißwanger

Technical University of Darmstadt

### Introduction:

On models as actors and stages

This session approaches models through tropes of the theater, such as stage/staging, plot/narrative, or actress/performance. Taking the performative potential of models literally, it asks for the realities models produce and the ways these realities are enacted by architects, clients, and the general public. Understood as stages or stage sets, models create both actual and potential realities. Asking for the plots or stories models tell to pursue, convince, or to question, the same applies to models in any scale or material form.

14:45 Christian Janecke

University of Arts & Design in Offenbach/Main

### Modeling scenic attitudes:

On funnels, conical stairs and caveae in postmodern architecture

In connection to rotundas, as an eye catcher of a foyer, as the focal point of a plaza, or to accent a courtyard in the 1980s one would sometimes come across funnel-shaped pits, stone benches arranged in a way reminiscent of the cavea of an amphitheatre, or a combination of the two opening onto conical staircases approaching a round podium – which in turn could constitute the tip of a further, now massive cone shape opening downwards. Such combined conical and invers conical stairs in the shape of an hourglass have existed since the Renaissance. In Baroque theatres, they connected the stage and audience area, in gardens they created a link between different terraces.

An *indecision*, and a multiple one at that, is characteristic of the Postmodern use of such elements: To begin with, they seem to make no clear choice between being tribune (stone steps) and stage (podium), which in turn leaves us in the dark as to whether we are to attend someone else's performance here or make our own grand entrance; finally it is unclear whether we are being presented with a 1:1 situation in its own right or the evocation of a much bigger, possibly even ancient theatre venue.

This paper argues that the half-heartedness of an allusion to theatre in de-theatricalized times, as well as the gap between existing small form and imagined large form here reveal the role of the implicitly modelled: Namely that it does not precede the built form but is inherent to it!

Lisa Beißwanger is an art historian focusing on the 20<sup>th</sup> and 21<sup>st</sup> centuries. She currently researches and teaches at the Departments of Architecture Theory and Science and History of Art and Architecture at the Technical University of Darmstadt. Previously, she worked as a curator of contemporary art, and received her PhD from Justus Liebig University Giessen in 2020.

Christian Janecke, Dr. phil. habil., has been Professor of Art History at the University of Arts and Design in Offenbach/Main since 2006. Having published a number of essays on the stage and the stage-like, Janecke is currently working on a book outlining such approaches towards the theatrical beyond theatre in visual culture.

## From site to set: The multi-scalar effect of architectural models in crafting gender and sexuality in postwar Italy

In 1962 four Italian directors co produced Boccaccio '70 a four episode anthology that criticized the moralizing attitudes around sexuality in post war Italy. Federico Fellini's episode, *Le Tentazioni del Dottor Antonio* centers on the crusade of Antonio to protect Rome from pervading vices, among which is a billboard outside his window featuring the seductress Anita Ekberg advertising milk. Set within the EUR in Rome – a 1937 newly designed quarter serving as a full scale model of Italian modernization under Mussolini – Fellini used the district to expose the continued presence of Fascist ideology within the Christian Democrat government that ruled after the regime's dissolution.

As the construction of the EUR recommenced in the late 1940s, it became a favorite filming location for Italian directors, who cited its abstract and rectilinear forms as the ideal film set. Fellini commissioned a 1:6 scale model of the district within which giant Anita could terrorize and seduce Antonio. Emerging from the flatness of the billboard, model occupied model, showcasing an alternative modernity that promoted the liberation of the male gaze while maintaining the status of women as object.

Fellini's reconstruction collapses two types of models: the scalar reconstruction of EUR and the giantess as billboard come alive. This paper investigates the site's palimpsest of models to show how the architectural model, whether to criticize ideological hubris or to frame gender politics, is deployed as a medium to facilitate the mediation of architecture into a scale that enters mass media systems, thereby shaping publics.

Giulia Amoresano is a PhD Candidate in Architecture at the University of California Los Angeles where she is completing her dissertation titled "Cultivating the Italian Empire: Architecture and the origins of the Global South (1861–1914)". In her scholarship and pedagogy, she focuses on transnational histories of architecture and the intersection of architecture to the politics of nation-state and empire building.

Christina Moushoul obtained her Master of Architecture degree from Princeton University in 2022, where she won the Suzanne Kolarik Underwood Prize and the History and Theory Prize. While at Princeton, she was an editor of *Pidgin* and a co-founder of the *Salon Series*. She is a cofounder of the design practice *Office Party* and the journal *Party Planner*.

## Sculptural puzzles. A conversation essay about model making, rituals and material literacy in architecture

When actors act, the material – the costume, the lighting, the language – supports them to slip into their roles. According to Card "[r]eenactors use their bodies in this way. They perform the past by relating their bodies to past activities and engaging with material culture (...)"<sup>1</sup> The performative capabilities of architectural models, that is, the employment of a model in layered ways, the scale of materiality, form, scale, etc., participate in a performative act. The complexity of performative skills has the potential not only to construct realities, but also to shed light on what kind of history is produced and presented through the re-enactment of archives.<sup>2</sup> Drawing on a five-month remote ethnographic study on in-house model maker Ellie Sampson at the award-winning London-based architecture firm HaworthTompkins (HT) conducted during the 2020 global pandemic, and a subsequent two-month practice-based study (re-enactment) in HT's workshop in 2021, this paper sheds light on practices of model making and their potential for new mediations, as well as new understandings surrounding 'material literacy' in the digital age. This paper also challenges academic research by applying the form of a conversational essay, thus providing an opportunity to translate theoretical knowledge directly into practical thinking.

1 Card, Amanda. 2019. "Body and Embodiment" in Agnew, Vanessa, Jonathan Lamb and Julianne Tomann. *The Routledge Handbook of Reenactment Studies: Key Terms in the Field*. London: Taylor and Francis: Pp. 30–33.

2 Haines, Elizabeth. 2019. "Archive" in Agnew, Vanessa, Jonathan Lamb and Julianne Tomann. *The Routledge Handbook of Reenactment Studies: Key Terms in the Field*. London: Taylor and Francis: Pp. 11–15.

Mara Trübenbach is an architectural designer and PhD fellow at the Oslo School of Architecture and Design, strongly interested in the intersection of craft, material and alternative design methods in architecture such as performance and applied theatre studies. In her dissertation, Mara explores the question of how material empathy contributes to the design process in architecture. She is part of the EU Horizon 2020 international training network *TACK / Communities of Tacit Knowledge*.



# 16:40–18:40

## ⑥ Am I the real thing?

16:40 Christiane Fülcher

Dortmund University of Applied Sciences & Arts

### Introduction: On copies and casts

In times of NFTs, where the subject of originality is redefined in relation to digital or digitised models, we want to look at the blurred dividing lines between a copy, a cast and their so-called “originals”. When a building is built after a surviving model as only evidence, or a model is cast from a building only rendered through a facade drawing or a photograph, “copying” becomes a transformative act, reframing the model’s categorical role as mere referent.

Christiane Fülcher is Professor for Building History, Research and Heritage at Dortmund University of Applied Sciences and Arts. Trained as an architect and art historian, her research focuses on the cultural - as well as socio-political objectives of architecture and the history of architectural education. She is author of the monograph “German Embassies. Between Distinction and Adaption” published in 2021.

16:55 Diana Cristobal Olave

Princeton University

### One-to-one scale: Witnessing the Walker Art Center’s Idea Houses I and II (1941–1947)

This research paper examines the modeling and exhibition practices of “Idea Houses I and II” (1941, 1947) built by the Walker Art Center in Minnesota to showcase the American public a new lifestyle yielded by architecture. These full-scale house models are the origin of the museum model home exhibition in the U.S., but also a relevant case study to historically situate shifts in forms of displaying and receiving information. Conceived against the backdrop of the Great Depression and the post-war housing crisis, the Walker Art Center reimagined the museum experience as an event accessible to a large public, organized around everyday issues, and discussed around one-to-one scale models – rather than drawings.

To study the dominant modes of observation and truth that were developed around these models is to pay attention to the ways in which a museum promoted a shift from older forms of spectatorship, based on the passive and distant reception of information, to an active and “probatory” form of cognition. These houses utilized complex material, literary and social technologies to convince museumgoers of the role of architecture in encouraging a new way of life for the suburban American family. Such “convincing” was built around the illusion of creating an unmediated and unbiased visitor experience through full-scale, fully-functioning models. By insisting on the physical integrity of such models, this paper argues that the experience of the exhibition-goer shifted from a passive observer taken away by dramatic and dazzling forms of entertainment, to an active witness that provided testimonial evidence.

Diana Cristobal Olave is an architect and scholar, currently pursuing a joint Ph.D. degree in History and Theory of Architecture and the Interdisciplinary Humanities, at Princeton University. She holds degrees in architecture from Columbia University and ETSABarcelona. Her work bridges histories of science and technology with design and architecture, with a special focus on practices of computing and information visualization.

## Unstuck architectures: When the building becomes a model

Architectural reconstructions are controversial. They challenge the *Zeitgeist* and are often accused of being falsely old and falsely new. Both the lack of authenticity and the intent to deceive are persistent arguments against operations intending to rebuild old architectures in a new time or place. Even afterwards “The Age of Mechanical Reproduction”, architecture replication is still frowned upon. The main issues seem to lie more on morals than on loss of quality, as it is usually claimed. Hence, when replications are unstuck from their original site, devoid of their utilitarian purpose, criticism fades away. In an exhibition context, reconstructed remarkable architectures become models of themselves and are free from the label of fake. Some examples are the Le Corbusier’s Unité de Marseille apartment, rebuilt in the Cité de l’Architecture et du Patrimoine; the Maison Tropicale, designed by Jean Prouvé and adapted by Rirkrit Tiravanija as the artwork Palm Pavilion, currently exhibited outdoors, at the Brazilian Inhotim Institute; or the living room of Francis Little House II, designed by Frank Lloyd Wright for a lake shore and rebuilt inside the Metropolitan Museum of Art. Unlike a sculpture replica, a 1:1 architectural model deceives no one, even if resulting from the same design that the building.

Furthermore: detached from the context the architecture was designed for, a real scale model not only does not threaten its original but also reinforces its value, granting it the status of a museum masterpiece.

Ana Carolina Pellegrini is an Architect (UFRGS, 1999), Doctor (UFRGS, 2011) and Professor at the Federal University of Rio Grande do Sul (UFRGS), in Porto Alegre, Brazil. She teaches both in undergraduate and graduate courses and researches about the design as heritage, tackling architectures characterized by the coexistence of projects designed at different times – such as renovations, restorations, annexes and reconstructions.

## The modeling grammar of the real

This article examines the irreconcilable concept of the real between the literal and virtual realities in reference to a weird relationship between the city hall and its mockup model of Marl, Germany. After testing its real quality as a preparatory physical model, the mockup model is imposing its real value more than before by remodeling into a children’s library. These days, the city hall is also going through a remodeling procedure as if resonating with the mockup model’s remodeling after about 40 years’ silence. Finally, both city hall and mockup buildings become less dependent on their original model designed by architects Van den Broek en Bakema in the 1960s. All three models seem to express their exclusive quality of the real in mutually exclusive realities yet, bound each other with the same modeling grammar. The speculation to the real seems to be inevitable as the idea of real becomes questionable. Little attention has been drawn to the extent to why the concept of the real represents almighty yet, only within exclusive realities based on the Post-war architectural discourse. Through the critical assessment of the mockup model and the city hall building, this article attempts to ventilate the concept of the real whose representational concept of model changes over time. The examination utilizes a couple of foundational criticisms on the real and reality by Postmodern architects such as Alan Colquhoun and Peter Eisenman in comparison to the current usages with less discretions.

Wonseok Chae is an architect. His current practice is oriented in questioning the concept of reality through the formal language of architecture. He graduated from Städel Schule Architecture Class with Master thesis prize in 2016 and he teaches at the Bergische Universität Wuppertal since 2018. He is currently preparing a thesis work, designing a house, and launching a design group for art exhibition and virtual reality based on teaching practice.

## Studying, copying, making, sharing. Multiple approaches to an historical model.

In 2018 the fragment of a 19<sup>th</sup> century model of the Royal Albert Hall was found in the back of a cupboard. Observation of the surviving parts and a study of archival sources enabled a basic undertesting of its history and function: it played an important part in the design process, as a tool for building consensus between the designer and the Committee of Advice, and it was a 'place' of experimentation. Many questions remained open, though.

The process of building a physical 'copy' of the model, including an informed guess of what the missing parts might have looked like, was a precious opportunity to intimately understand the historical artefact. Simultaneously, a digital twin was produced. Enriched with annotations, it presents information on the physical qualities of the 'original' and the clues it contains to its history, and to how it fits within a 'family of models' of the Hall.

What is the potential of physical and digital replica models as instruments for historical enquiry? What can we learn in the process? These are some of the questions at the core of two research projects conducted as a collaboration between the V&A, Manchester University's B15 model making workshop and the CNRF's MAP laboratory (Marseille).

The paper will explore the epistemic qualities of these different models and reflect on the design and research journeys which produced them – in the 19<sup>th</sup> century and today. A discussion of the Albert Hall's historical model, which bears traces of the different stages it forwent and doesn't completely reflect the Hall as built, will contribute to problematising the idea of an 'original'.

Dr Simona Valeriani is senior tutor at the V&A/RCA History of Design postgraduate program. Among her recent projects are the International Research Network *'Architectural Models in Context'* and the resulting follow on project culminating in the exhibition *'Shaping Space-Architectural Models revealed'*, both funded by the AHRC. She has co-edited *An Alphabet of Architectural Models* (Merrell, 2021) and is completing a monograph on the history of building the Royal Albert Hall (Brepols, 2023).

A conversation  
between Anna-Maria Meister and  
Annabel Jane Wharton with artist  
Thomas Demand [online] on the  
model as technique, material, and  
form – and its role in societal and  
artistic processes. They will discuss  
the material resistance of models  
during their making as well as their  
representation, the scalar limits  
of multiplication, seriality and size  
of models, and questions of joinery,  
precision and semblance.

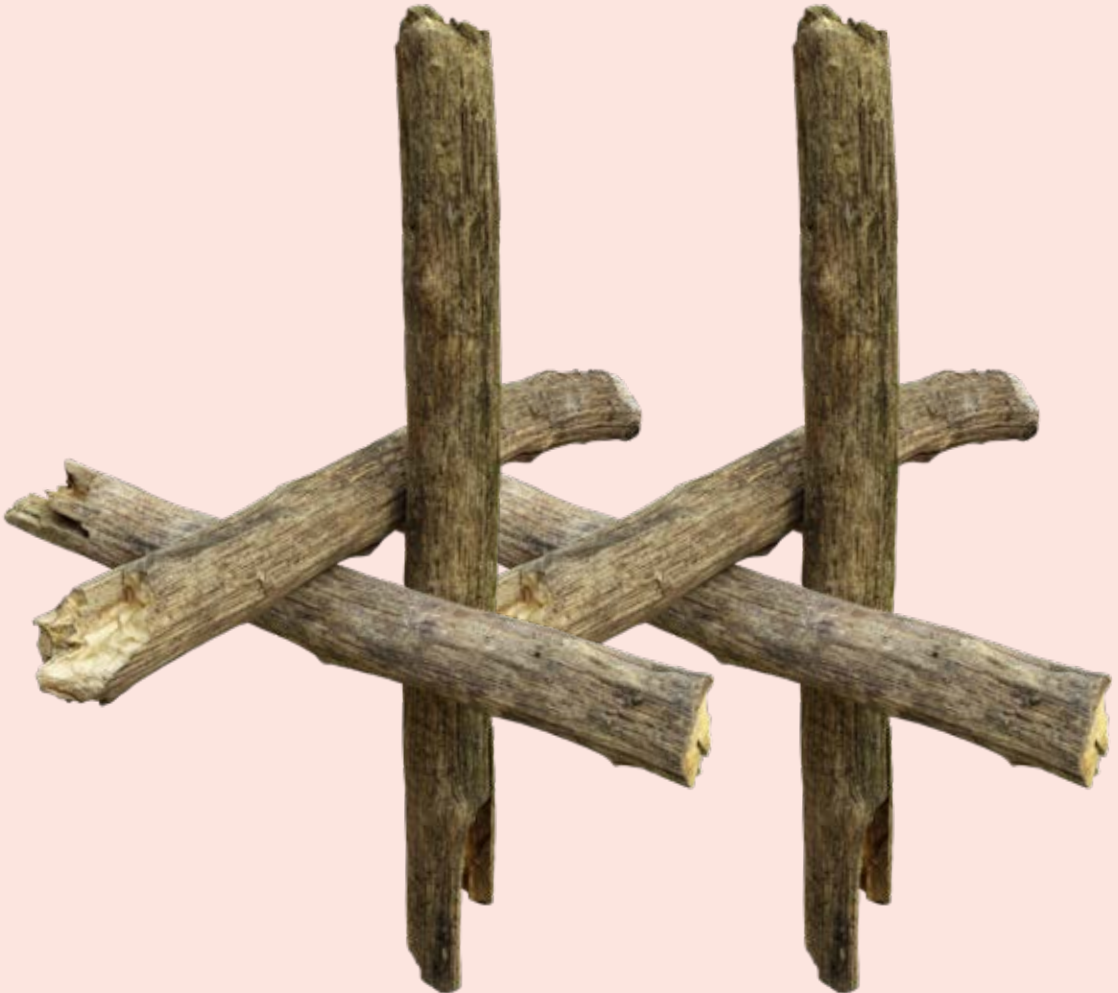
Thomas Cyrillus Demand was born in 1964 in Munich, Germany. From 1987 to 1992, he attended both the Academy of Fine Arts in Munich and the Düsseldorf Art Academy before receiving a master's degree in fine arts from Goldsmiths' College in 1994 in London. He initially focused on sculpture, using photography to document his paper and cardboard reconstructions. In 1990, however, photography and sculpture traded places in his artistic process; the photograph became the artwork. Since 2011, Demand has been working as a professor at HFBK, the Hamburg University of Fine Arts. The artist lives and works in Berlin.

Friday

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9:00–11:00

⑦ Do we look alike?

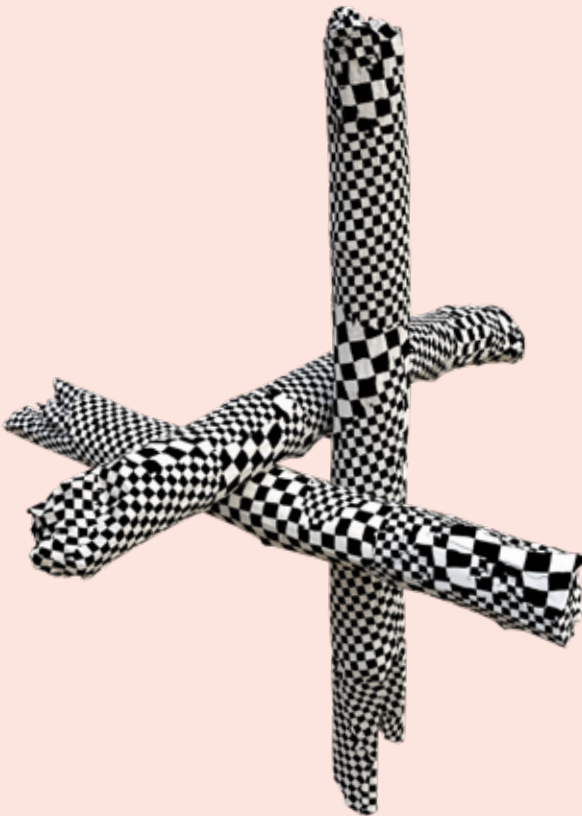


11:30–13:10

⑧ Where  
are you  
going?

14:30–16:10

⑨ What  
can you  
learn from  
me?



# 9:00–11:00

## ⑦ Do we look alike?

9:00 Chris Dähne

Goethe University Frankfurt am Main and

Technical University of Darmstadt

Andreas Noback

Technical University of Darmstadt

### Introduction: On digital twins and simulation processes

In architecture, models – whether physical or virtual – assume the role of a manipulable “twin”. They allow us to experimentally test real requirements and conditions.

They are woven into dynamic interrelationships between the physical (real) and the modeled (digital), which raise the question of what exactly happens when, for example, a digital model experiences the materialization of its data, or vice versa. The session focuses on heterogeneous models – within the paradigm of integrative design and digital process chains – that simulate not only the design of the building itself, but also its environment, its carbon footprint, and its robotic assembly line.

Chris Dähne researches the history and theory of architecture, media, and computation. She is researcher in the LOEWE Research Cluster “Architectures of Order. Practices and Discourses between Design and Knowledge” at Goethe University Frankfurt a. M. and in the DFG project BAUdigital at TU Darmstadt. Forthcoming is her book *Utopia Computer. The New in Architecture?* (with Nathalie Bredella and Frederike Lausch).

Andreas Noback: Architectural studies at Technical University of Darmstadt 1993–2002. Afterwards Lead of IT at the faculty of architecture. Senior Research Associate at Lucern University of Applied Science and Arts 2014–2018. PhD 2020. Since 2020 work for the specialised information service BAUdigital and since 2021 Postdoc at the department for classical archaeology at Technical University of Darmstadt.

9:15 Gabriele Gramelsberger

RWTH Aachen

### Digital twin, metaverse and computerbased simulation

Modeling and simulation in science are used to conceive and project possible futures based on today's behavior. In times of climate change modelling in climate science, urban planning, economic development and in many more disciplines become existential views into possible futures. Thus, model projections can become prototypes of possible futures-comparable to architectural planning as prototypes support learning and communication about alternative styles, features, and patterns. The paper explores this analogy between scientific models and architectural planning practices.

Gabriele Gramelsberger is professor for theory of science and technology at the RWTH Aachen University. She studies the transformation of science into computational sciences. She is director of the Käte Hamburger Kolleg “Cultures of Research”, an International Center for Advanced Studies in Philosophy, Sociology, and History of Science and Technology funded by the German Federal Ministry of Education and Research.

## The model multiple: On approximation work in digital models and twins

Digital models and workflows are omnipresent in design, engineering, and construction practice, reaching a pinnacle in the form of digital twins. Within the integrative design and construction paradigm, computational design models, simulations, and digital twins figure as holistic approaches to a particular problem, bearing the cybernetic overtones of universality and centralized control. The reality, however, is one of ruptures and multiplicities between digital modeling epistemologies, practices, processes, and technologies. Whereas advanced research-based approaches to design and modeling contrast professional practices and experiences, in a professional setting, the same digital model and its occasional twin can become multiples with every other actor involved in the design process. As anthropologist Annemarie Mol notes, reality multiplies “since the object of manipulation tends to differ from one practice to another” (2002). Following Mol’s concept of the “body multiple”, this paper proposes the notion of the “model multiple” to understand the approximation work performed by various actors in creating digital models and eventually digital twins. The paper discusses how the multiplicities of digital models are rendered practicable through an analysis of design meetings’ observations on the border between computational design research and architectural practice, as well as interviews with professionals. It draws on scholarship across science and technology studies and digital media studies to reframe the dualistic distinctions, boundaries, and differences around digital models.

Yana Boeva is a postdoctoral researcher at the Institute for Social Sciences and the Cluster of Excellence “Integrative Computational Design and Construction for Architecture (IntCDC)”, University of Stuttgart. She holds a PhD in Science & Technology Studies from York University, Toronto, and an MA in Media Studies from the Humboldt-University Berlin.

## Digitally recreating the Mannheim Multihalle model – Exploring the simulation of physical form-finding in the tradition of Frei Otto

For the construction of the pioneering wooden grid shell of the Mannheim Multihalle several different physical models were built: For the natural form finding and adaptability a model made of wire-mesh was used. To calculate the forces the planning team started building physical models, made of hanging-chains. The hanging model model turned upside down resulted in purely compression-loaded shapes. This elaborate model made on a scale of 1:98.5 has been preserved at the Deutsches Architekturmuseum (DAM) in Frankfurt and will be case studied in this paper.

As part of the the sub-project “The Last Witenesses” of the priority program “Cultural Heritage Construction” of the Deutsche Forschungsgemeinschaft DFG (German Research Foundation), the model was recorded photogrammetrically and digitally remodelled. To create the hanging chains, three different methods were implemented in Grasshopper and compared: dynamic relaxation techniques with a spring-particle system, a mesh drape and the compass method which Frei Otto introduces in the IL booklet number 10, which was written as a recursion in C#. In this context the initial question Do we look alike will be examined. Furthermore, the digital twin will be used to calculate the potential power generation by mounting solar panels on the roof cladding.

Paper with Eberhard Möller

Baris Wenzel studied architecture and worked for 5 years in Mexico as an architect and computational designer. There he developed a great interest in polygon meshes and their applications in architecture, civil engineering and digital fabrication. Currently he works at Hochschule Karlsruhe and as facade designer at knippershelig advanced engineering. He is also completing his doctorate at the UIBK Innsbruck.

## Models in reality: Computation and simulation in architecture

One of the most enduring influences on architectural design is the simplified ideal scenario according to which the design process is a chain of modelling stages that lead from the large to the small, from urban design to detailed structural planning. At the beginning of each modelling stage there is an architectural hypothesis with its respective specific subject promise. The final modelling stage at the end of the chain is the specific construction. Computer-based design seems to interrupt this ideal chain of design operations. With the help of 3D modelling software, the design is developed less in successive stages that build on one another and more in a single stage that theoretically includes all other stages. Digital process chains eliminate the traditional separation between intellectual design act and material execution. Production technologies directly intervene in the design processes.

In light of these fundamental changes in design processes, drastic crisis scenarios of the loss of importance of architectural design have been drawn up in recent years, whereas the consideration of the active potentials of computer-based models have remained underexposed. This talk will therefore focus on digital and pre-digital models and modelling practices that can be considered as emergent expressions of complex real-time systems. Modelling material systems and force fields in digital 3D space abandons the notion that the model is merely an abstract scheme. Rather, in the digital model, a multi-layered event is made tangible in actual execution, which is essentially determined by its relationship to matter and material. The model literally steps into action to give an idea of itself in two respects: On the one hand, it appears as an event that takes place in reality; on the other hand, it enables an idea of the complexity of the medial and material context of effects, which includes a multitude of highly heterogeneous factors. In this talk, models are understood as technical-ecological assemblages that set spatial, material and atmospheric processes in motion, thereby giving rise to a wide range of new ideas.

Carolyn Höfler is Professor of Design Theory and Research at the TH Köln. She studied art history, German literature, and theater & film (M. A.) as well as architecture (TU Diploma) at universities in Cologne, Vienna, and Berlin. In her dissertation at the Humboldt-Universität zu Berlin, she explored the history and theory of computational design in architecture. Until 2013, she was a teacher and researcher at the Institute of Media and Design, TU Braunschweig.



11:30–13:10

## ⑧ Where are you going?

11:30 Nadja Gaudillière-Jami

Technical University of Darmstadt

**Introduction:  
On models in future practice**

In this session, we think about the model's future. More and more formerly disparate steps become integrated in ever smarter building information models; at the same time students of architecture produce ever larger physical structures as models. Which processes will remain inherently bound to modeling, which ones will be displaced to other parts of architectural design and building? Will the model become marginalized, or will it absorb all other parts of the building process? Will all structures be built models in the end?

Nadja Gaudillière-Jami holds a Master of Architecture from the ENSA Paris-Malaquais and a doctoral degree from the Paris Est - Gustave Eiffel University. A co-founder of XtreeE the large-scale 3D, she is also the president of the NGO thr34d5 and co-heads the Computation In Architecture master programme at the Centre for Information Technologies and Architecture at the Royal Danish Academy. After working several years as a project manager at XtreeE and as a Graduate Research and Teaching Assistant at the ENSA Paris-Malaquais, she is now a postdoctoral researcher at the Digital Design Unit (TU Darmstadt) and the LOEWE Research Cluster "Architectures of Order. Practices and Discourses between Design and Knowledge". A specialist of the digital in architecture, she focuses on two main research axes : the industrialisation and environmental impact of architectural robotics and the history and epistemology of the computational field in architecture.

11:45 Andreas Pilot

Technical University of Darmstadt

**Built together! Digital models and teaching teamplay**

**Problem Statement:** to create, to access and to work with digital building design models requires technical equipment, tool competence and practice in addition to design competence. entry barriers seem higher and assuming a similar outcome as teaching with analogue models, only additional value would give reason to use digital models. If different disciplines are working on a building design as a team, a uniform understanding contributes significantly to smooth team play. It is therefore highly desirable to reduce the scope for interpretation and the demands on spatial imagination. digital models - which can also be experienced 1:1 via virtual reality, provide exactly these experiences. However, investment in the competence of all participants in dealing with digital models is required.

**Purpose:** The focus of the digiLEARNbim research group, which consists of the Institute for Knowledge Media in Tübingen, the University of Applied Sciences Erfurt and the Technical University Darmstadt is on the following question: How can technology acceptance methods be used to lower the hurdles to such an extent that the potential of digital, model-based, interdisciplinary collaboration can unfold effectively?

**Methods:** Best practice examples are used to explain where didactic, methodological and technical keys lie to enable students to design and plan together, working with coordinated digital models from different disciplines and systems. The results of research on the changes in perspective includes how the participants' attitudes change through collaborative model-based work and VR walk-throughs of self-created worlds as a team. They are used to show which role prior knowledge, self-efficacy and technical equipment plays.

Andreas Pilot was part of the German Solar Decathlon Team that won the competition in Washington D.C. in 2007 before he graduated in 2008 at Darmstadt University of Technology. As an architect on the one hand he worked on awarded sustainability-driven and interdisciplinary projects in Germany and as CEO of an IT company on the other hand he works as a Manager and Coach for Building-Information-Modeling (BIM). He is involved in numerous BIM-networks and committees and has headed the BIM Studio at TU Darmstadt since 2019, focusing on teaching and research on model-based and interdisciplinary methods.

## The mock-up

In September 2021, one could count 23 mock-ups in Zürich. They are omnipresent in the urban landscape as the side effect of excessive construction activity. Situated on the plot rather than the architect's office, they are models at a critical moment of transition. Mock-ups are a laboratory bringing architects and builders together to collaborate. Their ephemeral nature reveals possibilities for solutions beyond regulations. They are models of a complex social, political and economic field within which architecture positions itself.

The master thesis studio at ETH Zürich supervised by Jan de Vylder, Silke Langenberg and Maarten Delbeke in Fall 2021 focused on mock-ups. Students investigated their various meanings and development scenarios. Projects explore how mock-ups announce the forthcoming transformation of a place and its impact on the inhabitants. A project focuses on a mock-up commissioned by the Swiss Federal Railways for an office tower for which no tenants could be found, and explores how the mock-up becomes an agent for speculation. Another project links the mock-up of an office building to single family houses at the periphery of Zürich and builds on the unintentional combination of two seemingly opposite typologies, revealing a system of social ideologies and economic power that shape the built environment.

Our contribution discusses through student projects how mock-ups act as a magnifying glass and showcase not only current technical standards and aesthetic preferences but also refer to the driving forces behind the current building activity.

Paper with Orkun Kasap, Jan de Vylder, Maarten Delbeke and Silke Langenberg

Salome Schepers is a research assistant at the Chair of Construction Heritage and Preservation at ETH Zürich. She recently finished her Master's degree in Architecture at ETH Zürich after a bachelor from EPFL Lausanne and LTH Lund, Sweden. Next to her studies, she has worked in several practices in Australia and Switzerland.

## Beth Hughes

## Set and setting: Architecture and the rehearsal of sense

The destiny of the architectural model changes with the birth of mass media. Like the projects they purport to represent, three-dimensional physical models increasingly circulate as images. We claim that architectural models cannot be understood outside of the network of sensors, screens, and software platforms that structure their mediation and value. We describe this network as a set. The set produces unique sensory and imaginative effects in relationship to making, collaboration, and viewing. Sets are powerful because they are originally contradictory and discontinuous, liberating uncertain relationships between models and audiences with respect to motivation and meaning. Through a series of case studies, we will examine the way architects, artists and performers utilise sets as a creative tool within their practice, proposing a provisional theory for the effects they generate.

Adrian Lahoud is Dean of the School of Architecture at the Royal College of Art. In 2019, he curated the inaugural Sharjah Architecture Triennial on the theme 'Rights of Future Generations'. He is currently working on a project exploring the intersection of architecture, anthropology and semiotics.

Beth Hughes is the Head of Architecture at the Royal College of Art. In 2019 she was thematic curator for the 2019 Seoul Biennale of Architecture and Urbanism. She is currently trustee of the Victoria and Albert Museum, London. Her current research explores the securitisation of the mediterranean and Italian fascist colonialism.

14:30–16:10

## ⑨ What can you learn from me?

14:30 Christina Clausen

LOEWE Research Cluster "Architectures of Order"

### Introduction: On model didactics

Looking at architectural models that were produced to prove or provoke ideas or define canons, this session asks questions about the material production of knowledge through models and analyzes the implied values and projections that models were (and still are) asked to transport. Be it a training model in digital space, the plaster casts of famous classic forms or the archaeological reconstruction of the Temple of Solomon, models inform and mold what makes (and breaks) "architecture" as a discipline.

Christina Clausen studied art history and German literature in Marburg, Padua and Berlin. After completing her master's degree at the Humboldt University in 2014, she was a research assistant in Hildesheim. Since 2020 she is a doctoral researcher at the LOEWE Research Cluster "Architectures of Order Practices and Discourses between Design and Knowledge". In her PhD project she analyzes the visualization of medieval architecture in models, paintings and museum displays in the 19<sup>th</sup> century.

14:45 Kelly Joan Whitmer

Sewanee: The University of the South

### Games, models and projects in pedagogical praxis, c. 1650–1750

Widely valued for their ability to support strategic thinking, collaboration and to create opportunities for young people to "try out" particular tools, games held (and still hold) enormous pedagogical potential. Although aware of their ability to damage children through addiction or distraction, early modern contemporaries generally embraced games – and the models, tools and materials needed to play them – as media that were uniquely situated on a threshold between present day reality and future possibility. These media created opportunities for young players as learners to "project" or to simulate future real-life scenarios, thereby validating acts of risk-taking and efforts to more usefully apply or direct the imagination. In this paper, I consider relationships between models as pedagogical tools and the forms of mimicry or role-playing activities that several early modern pedagogues envisioned these versatile tools were capable of fostering. I also pay special attention to the role of models and modeling practices in the "Oeconomic" games and projects of early promoters of political economy in the German states – and beyond.

Kelly J. Whitmer is Associate Professor of History at Sewanee: The University of the South. Her first book, *The Halle Orphanage as Scientific Community* appeared in 2015 (University of Chicago Press). She recently spent two years at the University of Göttingen completing a new book about youth, science and pedagogy thanks to the support of the Alexander von Humboldt Foundation.

## What we have learned, so far

Architectural design pedagogy raises many questions in relation to the technological tools. These are necessarily *medium*, means of communication and translation of the notions and issues to be transmitted to the students. The meaning of what is taught is closely linked to the limits of the tools used. The physical model, in its different scales and in different materials, is a *cold medium* [McLuhan, 1967]: it conforms critical space yet it allows ideas to freely flow since it does not state but it *alludes*. Models are *allusive* objects, they ask to be approached using their physical presence to convey possible meanings that refer – through similarities – to *references without reference in which the reference is needed to be sought* [Jullien, 2019]. Starting from the personal pedagogical research carried out by the author in recent years in various design studios at the University of Naples “Federico II”, a research project was launched, which resulted in the first issue of the international journal STOA, entitled *Models*. A number of architects, professors in international schools (including Nicolai Bo Andersen, Asli Cicek, An Fonteyne, Anne Holtrop, Renato Rizzi, Takero Shimazaki, Annette Spiro, Jurjen Zeinstra and many others) were questioned about their teaching practices mediated by physical models, their orientations and cultural references, and how architectural models are fundamental tools for teaching architecture. The presented result is a survey of some teaching practices that have at their centre physical models, never intended as objects of representation but always used as living and active elements for the teaching of design.

Alberto Calderoni is a researcher in Architectural and Urban Design at the University of Naples “Federico II”. His research topics are mainly related to the study of the city, of the project as a tool for knowledge of reality and of pedagogy for architectural design. Since 2021 he is editor in chief of the magazine STOA, a journal that aims at combining academic research and teaching practices.

## What am I, actually? the model of the Halle orphanage (1719/20)

The Orphanage of the Francke Foundations in Halle (Saale) was built between 1698 and 1701. A model of the structure and the adjoining buildings of the lower courtyard (1709–1717) was produced in the winter of 1719/20. In its disassembled state, the model represents the different functionalities of the various buildings. Additionally, some of the rooms in the model still retain their miniature interiors. Beginning in 1741, it became part of the then newly established Cabinet of Artefacts and Natural Curiosities (the so-called Wunderkammer) located in the lower mansard roof of the Orphanage. From the very beginning, the Cabinet was open to the public for guided tours. The model itself is still located in this early museum space today. However, no written sources on the model have survived. Chronologically, it was created between the construction of the buildings and the conceptualisation of the Cabinet. This circumstance poses a pivotal question: What was the purpose of the model at all? The presentation will try to answer this by pursuing different approaches: by looking at its contexts, materiality, and possible applications. Therefore, the paper will ask to whom it could have been shown for what purposes. However, the main goal will be to carve out plausible practices of how the model was used in different situations of communication and within object-settings. This leads towards an answer, or, more appropriate, a suggestion for answering the question: What am I, actually?

Since 2016, Holger Zaunstöck is head of the Administrative Department Research and the “Dr. Liselotte Kirchner-Fellowship Programme” at the Francke Foundations Halle. Zaunstöck studied history, social history, and economics at the Martin-Luther-University Halle-Wittenberg (1993 M.A.; 1998 PhD; 2008 Habilitation). In 2014, he was appointed as extraordinary professor. More recently, he has worked on the history of collections, architecture, medicine, youth, and Pietism.

# Venues

## Wilhelm-Köhler-Saal S103/283 Main location

Address  
S1|03 Altes Hauptgebäude  
Hochschulstraße 1  
64289 Darmstadt

### Individual transport

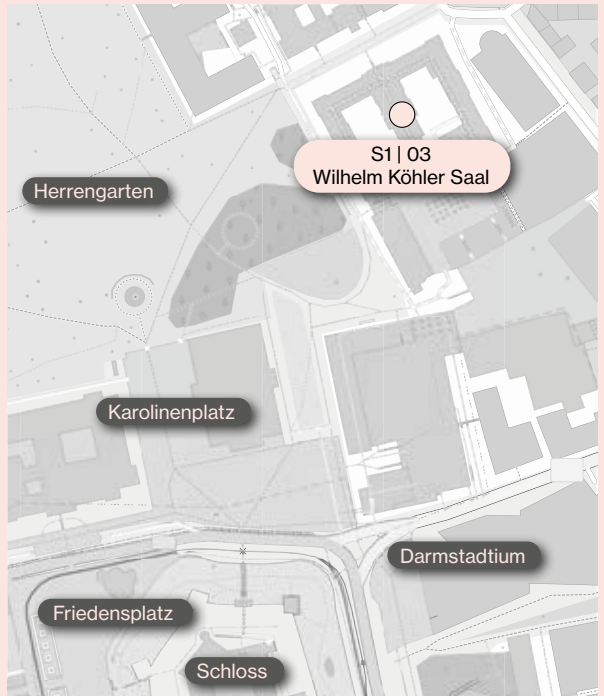
- A 5 / A 67 exit *Darmstadt Stadtmitte*
- B 26 *Rheinstraße* toward *Stadtmitte*
- B 26 *Cityring* section S1 located directly at the *Cityring*

### Coming from Frankfurt

- from the Airport, there is a direct "AirLiner" Bus to Darmstadt, disembark at the stop *Kongresszentrum* (= *Darmstadtium*)
- from Frankfurt Main Station (*Hauptbahnhof*), take a train to Darmstadt *Hauptbahnhof* and follow instructions for public transport

### Public transport

- Bus lines F and H from *Darmstadt Hauptbahnhof* via the central transfer point *Luisenplatz* to the bus stop *Alexanderstraße/TU*

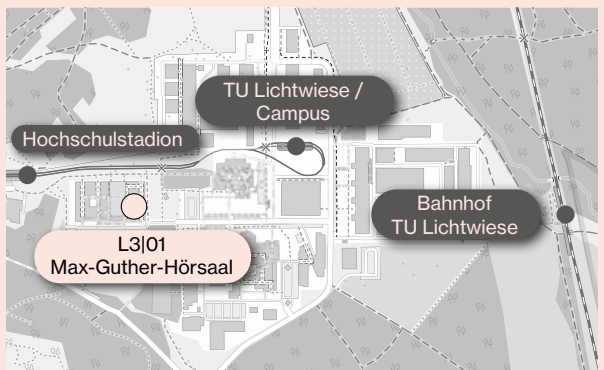


## Max-Guther-Hörsaal L301/A93 Evening location on Wednesday, 2.11.22, 19:30

Address  
L3|01 Architektur  
El-Lissitzky-Straße 1  
64287 Darmstadt

### Individual transport

- A 5 / A 67 Exit *Darmstadt Stadtmitte*
- B 26 *Rheinstraße* toward *Stadtmitte*
- B 26 *Cityring*
- B 26 *Landgraf-Georg-Straße*
- B 26 *Hanauer Straße*
- take a right into *Heinrichstraße*
- take a left into *Eugen-Kogon-Straße*
- take a right into *Alarich-Weiss-Straße*, the building is close to the end of *Alarich-Weiss-Str.* – the building number is L03|01, the venue is Room Number 93 in the building on the east side of the inner courtyard



### Public transport

- Tram 2 from Darmstadt Central Station (*Hauptbahnhof*) directly to stop *Hochschulstadion*
- or Busline K from Darmstadt Central Station (*Hauptbahnhof*) to the central changing point *Luisenplatz* (and from *Luisenplatz* alternatively with Busline L) to stop *Darmstadt TU Lichtwiese/Campus*
- or VIAS-Odenwaldbahn from Darmstadt Central Station (*Hauptbahnhof*) zur Haltestelle *TU Lichtwiese*, from there a 7 Minute Walk

## Organizers

Institute for Architecture  
Theory and Science (ATW)  
Technical University of Darmstadt

Building History, Research and  
Preservation, Dortmund University of  
Applied Sciences and Arts

LOEWE Research Cluster  
“Architectures of Order. Practices and  
Discourses between Design and Knowledge”

Platform for digital science and  
research FID BAUdigital

Deutsches Architekturmuseum,  
Frankfurt am Main (DAM)

Center for Critical Studies in Architecture  
(CCSA)

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