

# **Bauhaus Digital Masterclass & Grundlagenkolloquium Digitalisierung**

Die Bauhaus Digital Masterclass bringt ab Wintersemester 2018/19 zwei bis dreimal pro Semester renommierte nationale und internationale Forscher und Lehrende für einen Abendvortrag und ein eintägiges Blockseminar an die Bauhaus Universität Weimar.

Die Seminare widmen sich Grundlagenfragen der Digitalisierung im Schnittfeld zwischen Architektur, Design und Medien und richten sich an Studierende aller Fakultäten der Bauhaus Universität Weimar.

In der ersten Bauhaus Digital Masterclass am 19.10 2018 gibt der Architekt und Architekturtheoretiker Daniel Cardoso Llach von der Carnegie Mellon University ein Seminar zu Computational Design und Maschine Learning.

Öffentlicher Vortrag, 18. Oktober 2018 19 Uhr  
**The Calculative Imagination: Computation and the Boundaries of Design**  
Ort: Bauhausstraße 11, SR 014

Blockseminar 19. Oktober 2018 9:15-16:45 Uhr  
**Form & Information, Software comes to matter, Design, Ecologies & Networks**  
Ort: Bauhausstraße 11, SR 013

Website Daniel Cardoso Llach: <http://dcardo.com>

## **Stipendien**

Für Studierende von Universitäten außerhalb Weimars stehen eine begrenzte Zahl von Fahrtkosten und Unterkunftsstipendien zur Teilnahme an den Blockseminaren bereit. Für die Bewerbung schicken Sie bitte ein kurzes Motivationsschreiben an: [christoph.engemann@uni-weimar.de](mailto:christoph.engemann@uni-weimar.de)

## **Bauhaus Digital Masterclass 2018-2019**

Organisation & Koordination  
Dr. Christoph Engemann

<https://www.uni-weimar.de/de/medien/professuren/medienwissenschaft/theorie-medialer-welten/personen/engemann/>

<https://www.uni-weimar.de/bauhaussemester/>  
<https://www.bauhaus100.de/>

**Information & Anmeldung unter: [christoph.engemann@uni-weimar.de](mailto:christoph.engemann@uni-weimar.de)**

## **Bauhaus Digital Masterclass – Weimar, Fall 2018**

Daniel Cardoso Llach ([dcardoso@cmu.edu](mailto:dcardoso@cmu.edu)) – Carnegie Mellon University (Oct 17-18)

Lecture, October 17

### **The Calculative Imagination: Computation and the Boundaries of Design**

During the three decades following the Second World War, government investment in university research on both sides of the Atlantic funded multidisciplinary projects to harness the calculative power of computers for manufacturing and design. Along with novel technological systems and disciplinary identities, these projects kindled new visual and material languages, as well as new understandings of the design process and its actors. This lecture will examine this period of remarkable technical (and discursive) inventiveness, and trace critically its repercussions in architecture and other design fields. I will discuss how as Cold-War era technologists formulated Computer-Aided Design theories and methods, they debated the proper role of the computer in design, and re-specified, through their systems, notions of image, materiality, and labor. In their technological imagination, design was re-cast as a human-machine endeavor, and labor was subdivided anew and reconfigured around the calculative, representational, and material agencies of the computer. Through a selection of recent research projects, I will further show how experimental archaeologies and digital ethnographies may serve as instruments to probe this condition, and argue for an expanded form of architectural and design criticism that incorporates the extra-disciplinary socio-technical and discursive infrastructures of computing as central subjects of analysis, and as materials with which to model new questions about media and the design of our environments.

### Sessions, October 18

Session 1 (90 minutes)

#### **Form and Information**

This session proposes to explore “computational design” as a non-monolithic field shaped by different (and often conflicting) cultural sensibilities and aesthetic traditions. In particular, one concerned with accident, unpredictability, and authorial detachment, and another concerned with control, descriptive accuracy, and accountability. The first thematizes *form*, the second thematizes *information*. The session starts with a short lecture outlining the historical and cultural roots of both of these traditions —as well as some of their contemporary disclosures— and continues with an active exploration of procedural design methods. The session ends with a discussion about formal systems (understood to encompass a broad range of algorithmic devices) and their descriptive, analytical, and generative capacities.

#### *Readings*

- Steven Anson Coons, *An Outline of the Requirements for a Computer-Aided Design System*, M.I.T. Electronic Systems Laboratory. Technical Memorandum, ESL-TM-169 (Cambridge: M.I.T. Electronic Systems Laboratory, 1963). [[download link](#)]

- Douglas T. Ross and Jorge E. Rodriguez, “Theoretical Foundations for the Computer-Aided Design System,” in Proceedings of the May 21-23, 1963, Spring Joint Computer Conference (New York, NY, USA: ACM, 1963), 305–322, <https://doi.org/10.1145/1461551.1461589>.
- Daniel Cardoso Llach. “Between Accident and Control: Contrasting Traditions of Computational Design.” In *WWWDrawing*, edited by Janet Abrams and Mehrdad Hadighi. ACTAR, 2019: forthcoming. (pre-print)

Session 2 (90 minutes)

### **Software Comes to Matter**

This session focuses on the materialities enabled by (and constitutive of) computing. Framed within the relatively recent turn to materiality across disciplines, the session explores opportunities for design and technology scholarship in the messy intersections between symbolic systems and material artifacts. Conceptual and methodological tools to address these as worthy subjects of scholarly analysis and creative exploration will be introduced. We will consider ways to look at software as infrastructures and as theories of action, at technologies as artifacts historically and materially situated, and at the tensions between what Collins has termed “tacit knowledge” and the project of technical formalization underlying AI and machine learning as territories of design and media scholarship. Finally, through an overview of the “Archaeology of CAD” and other recent projects, we will consider experimental software archaeologies as instruments to both “re-presencing the past” (Sobchak, Vivian), and to approximate the material, sensual, and ergonomic signatures of technological systems, opening them up as spaces for creative exploration and analysis.

*Note: Prior to this session participants are asked to identify and document, in as much detail as possible, a design technology (broadly understood).*

#### *Readings*

- Daniel Cardoso Llach, “Software Comes to Matter: Towards a Material History of Computational Design,” *DesignIssues* 31, no. 3 (Summer 2015): 41–55, [https://doi.org/10.1162/DESI\\_a\\_00337](https://doi.org/10.1162/DESI_a_00337) [link]
- Gaboury, Jacob. “Hidden Surface Problems: On the Digital Image as Material Object.” *Journal of Visual Culture* 14, no. 1 (April 2015): 40–60. <https://doi.org/10.1177/1470412914562270>
- Sobchak, Vivian. “Media Archaeology and Re-Presencing the Past” in *Media Archaeology: Approaches, Applications, and Implications*, edited by Parrikka, Jussi and Erkki Huhtamo. Berkeley: University of California Press, 2011.

Session 3 (90 minutes)

### **Design, Ecologies, Networks**

This session reflects on the new forms of authorial agency emerging around digital infrastructures for design production. The session explores the tensions introduced in architectural and design discourses by computing paradigms such as BIM, as well as by more recent, data-intensive AI and machine learning methods, and considers —through recent work in design, urban, and spatial analysis— new methodological and pedagogical vehicles for addressing them, such as trace ethnography, critical data studies, and algorithmically enhanced forms of observation. Through these we will seek to trace situated and performative accounts of

design and computational media which avoid black-box explanations, and challenge central, panoptic views of design, technology, and the environment.

- Suchman, Lucy A. “Interactive Artifacts”. In *Human-Machine Reconfigurations: Plans and Situated Actions*, 33-51. New York: Cambridge University Press, 2007.
- Paolo Tombesi, “A True South for Design? The New International Division of Labour in Architecture,” *Arq: Architectural Research Quarterly* 5, no. 2 (June 2001): 171–80, <https://doi.org/10.1017/S1359135501001191>
- Daniel Cardoso Llach, “Tracing Design Ecologies,” in *Digital STS Handbook*, ed. Janet Vertesi and David Ribes (Princeton University Press, 2019: forthcoming). [Pre-print download link]

Session 4 (90 minutes)

### **Special Projects Seminar**

This session asks participants to draw from the concepts and methods introduced during the day to develop proposals for research projects addressing the intersection of design and computational media. The session ends with brief presentations by students, feedback discussion, and plans for further steps.

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Link to readings PDFs:

<https://www.dropbox.com/sh/nhxidxcq2rogm1i/AABQN6yO0q0Ms0ltIbc8Tnba?dl=0>